

2016



WORKING TOGETHER TO ENSURE STRONG PUBLIC PENSION SYSTEMS FOR MASSACHUSETTS

ANNUAL REPORT

COMMONWEALTH OF MASSACHUSETTS
PUBLIC EMPLOYEE RETIREMENT ADMINISTRATION COMMISSION





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BOARD PROFILE INDEX

Adams 10	Fairhaven 37	MWRA 64	Revere 91
Amesbury 11	Fall River 38	Maynard 65	Salem 92
Andover 12	Falmouth 39	Medford 66	Saugus 93
Arlington 13	Fitchburg 40	Melrose 67	Shrewsbury 94
Attleboro 14	Framingham 41	Methuen 68	Somerville 95
Barnstable County 15	Franklin Regional 42	Middlesex County 69	Southbridge 96
Belmont 16	Gardner 43	Milford 70	Springfield 97
Berkshire County 17	Gloucester 44	Milton 71	State 98
Beverly 18	Greater Lawrence 45	Minuteman Regional 72	Stoneham 99
Blue Hills Regional 19	Greenfield 46	Montague 73	Swampscott 100
Boston (City) 20	Hampden County 47	Natick 74	Taunton 101
Boston Teachers 21	Hampshire County 48	Needham 75	Wakefield 102
Braintree 22	Haverhill 49	New Bedford 76	Waltham 103
Bristol County 23	Hingham 50	Newburyport 77	Watertown 104
Brockton 24	Holyoke 51	Newton 78	Webster 105
Brookline 25	Hull 52	Norfolk County 79	Wellesley 106
Cambridge 26	Lawrence 53	North Adams 80	West Springfield 107
Chelsea 27	Leominster 54	North Attleboro 81	Westfield 108
Chicopee 28	Lexington 55	Northampton 82	Weymouth 109
Clinton 29	Lowell 56	Northbridge 83	Winchester 110
Concord 30	Lynn 57	Norwood 84	Winthrop 111
Danvers 31	Malden 58	Peabody 85	Woburn 112
Dedham 32	Marblehead 59	Pittsfield 86	Worcester 113
Dukes County 33	Marlborough 60	Plymouth 87	Worcester Regional 114
Easthampton 34	MHFA 61	Plymouth County 88	PRIM 115
Essex Regional 35	Massport 62	Quincy 89	
Everett 36	MTRS (State Teachers) 63	Reading 90	



2016 COMMISSION MEMBERS



Chairman

➤ **Philip Y. Brown, Esq.**
Chairman



*Vice
Chairman*

➤ **The Honorable Suzanne M. Bump**
Auditor of the Commonwealth
Vice Chairman

Commission Members



➤ **Kathleen M. Fallon**
Practice Area Director,
Public Consulting Group



➤ **Kate Fitzpatrick**
Town Manager,
Town of Needham



➤ **James M. Machado**
Sergeant, Fall River Police Department



➤ **Robert B. McCarthy**
President Emeritus of the Professional
Fire Fighters of Massachusetts



➤ **Jennifer F. Sullivan**
Assistant Secretary for Capital Finance,
Administration & Finance



PERAC MISSION STATEMENT

The Public Employee Retirement Administration Commission (PERAC) was created for and is dedicated to the oversight, guidance, monitoring, and regulation of the Massachusetts Public Pension Systems.

The professional, prudent, and efficient administration of these systems is the public trust of PERAC and each of the 104 public pension systems for the mutual benefit of the public employees, public employers, and citizens of Massachusetts. The stewardship of the Trust Funds for the sole purpose of providing the benefits guaranteed to the public employees qualifying under the plans is the fulfillment of the obligation of the people of the Commonwealth to those who have dedicated their professional careers to the service of the people of the Commonwealth.



DEDICATION

Kenneth J. Donnelly

It is with great sadness that we at PERAC dedicate this Annual Report to former Commissioner Kenneth J. Donnelly who recently passed away. Ken served on the Commission as representative of organized labor, appointed by the State Auditor from 1996 to January, 2009. In 2008 he was elected to the State Senate where he served until his death.



It is often thought that a public figure is a compilation of the accomplishments in the legislative arena, such as bills passed, causes supported, and votes taken. Ken certainly had many such accomplishments representing his constituents, advocating for public employees, and caring for the most vulnerable.

But to those who came into contact with Ken, he was much more than those achievements. Regardless of the issue of the day — whether a crisis, a triumph, or simple routine — he brought to those circumstances an enthusiasm and a calmness that assured that all would work out, that everyone played a role, and that the most mundane was important. Ken had a sincere interest in what each individual Commission member or staff member was doing, not only professionally but personally. At each meeting he would inquire about spouses, children, grandchildren, and mutual acquaintances, not in a perfunctory manner but with interest. Ken always had a word of encouragement, an expression of appreciation, or an offer to help.

Over the years, Ken served with a number of Commissioners with whom he interacted easily. For much of that time his good nature, sense of humor, and ability to see an issue from all sides proved quite valuable. The Commission structure called for the appointment of Labor and Management representatives. For much of its existence Ken was the senior Labor

Representative and Don Marquis, former Town Manager of Arlington, was the senior Management Representative. Staff and other Commissioners observed that as they worked together and frequently clashed, Ken always had a good word for Don and Don always had a good word for Ken. In time, this mutual respect grew into a friendship that embodied that old dictum “disagree but don’t be disagreeable”.

Ken, a Labor Advisory Board Member, Commissioner, and State Senator was often in the center of contentious disagreements about contract terms, legal interpretation and public policy. Yet, in spite of the intense emotions that arise in those circumstances, he respected his adversaries and they respected him.

Ken Donnelly was a man who left the world a better place, through his legislative record, his work as a labor leader, and his service to others. But perhaps his most lasting impact is on those who knew him and have tried in their lives to emulate Ken’s enthusiasm, dedication, and good humor. For that we are all eternally grateful.



LETTER FROM THE CHAIRMAN

The Public Employee Retirement Administration Commission is pleased to release this 2016 Annual Report reviewing the status of the Massachusetts public pension plans.

The investment performance of the systems detailed in this Report generally tracked that of pension plans throughout the nation. Although in 2016, Massachusetts' returns ranged from -46% to 10.63%, most systems achieved returns between 8.00% and 9.00%. Most importantly, long range performance with just two exceptions, exceeded 7.50% and, for thirty systems, equaled or exceeded 9.00%. And, we are pleased to note, that no system is deemed to be "underperforming" as that term is defined under Chapter 32.

These results are important because of the increased focus on public pension funds both in Massachusetts and nationally. It appears that the scrutiny has intensified with little attempt to distinguish between systems in various jurisdictions and, in fact, within jurisdictions. It seems that some attribute every governmental fiscal crisis from the Puerto Rico bankruptcy to the Houston pension system, not to general economic conditions, but rather to public pension plans.



Often this interpretation of events hides an agenda designed to eliminate the defined benefit plan. To that end, we must all be mindful that every action board members take will be subject to public scrutiny and must measure up to the fiduciary standards required of those who are charged with safeguarding pension benefits. Otherwise, we simply give more ammunition to those who advocate for the abolition of defined benefit plans.

Acting prudently does not mean that we still do not face significant financial challenges. However, those challenges will not be met by replacing the existing structure with a less secure plan that is subject to the same pressures. It is irrefutable that the

performance of the capital markets dictates the overall well-being of public pension systems. The same impact of investment performance determines the security of defined contribution plans. Massachusetts has aggressively revised the benefits available to recent hires to recognize demographic changes and long term trends, adopted the strongest governance and disclosure regimen for retirement systems and vendors in the nation, and made appropriations according to prudent and realistic funding schedules based on conservative actuarial valuations. As Chairman of PERAC, I am proud that the Commission has played a role in preserving and protecting our pension plan and look forward to continuing to fulfill that role on behalf of public employees, retirees, and beneficiaries for many years to come.

I am also proud of the work that the Commission has done this past year and would like to acknowledge the leadership and wisdom Mr. Connarton provides as our Executive Director. But more importantly, I would like to acknowledge the hard work and effort that all the staff gives on a daily basis. The Commission is very fortunate to have such dedicated people who always give their best.

Philip Y. Brown

A good example of the results of that effort is the new PROSPER system, which the Commission is excited to roll out. After a lengthy development process we are now up and running in the Compliance and Disability portals. By the end of the 1st Quarter 2018, the 91A and Finance elements will be in place.

Our experience to date confirms the wisdom of embarking on this course, as nearly all retirement board members and administrators have taken the steps to access the portal. This enables the member to receive up-to-date reports on the status of various forms that he or she must file, as well as to enroll for education courses, monitor the board's workload, and sign and submit procurement related documentation. For administrators, the program provides instantaneous reporting on the status of various tasks that must be performed, assures that submissions to PERAC are accurate and comprehensive, and enables easy access to PERAC instructional materials.

We also are trying to improve our outreach. To this end the Executive Director and staff has scheduled three one day sessions for administrators, staff and board members in the coming months.

Finally, we continue to work to bring clarity, uniformity, transparency, and fairness to the administration of Chapter 32. In the course of each year many retirement-related decisions are made by the Contributory Retirement Appeals Board (CRAB) as well as the courts. The Supreme Judicial Court has weighed in on pension forfeiture, regular compensation, and disability, as well as other pension matters.

We would like to draw attention to a CRAB decision that relates to PERAC's authority. On November 18, 2016 CRAB determined that "memoranda issued by PERAC to retirement boards are binding on the boards." *Grimes v. Malden Ret. Bd. & PERAC*, CR-15-5 (CRAB 2016). CRAB states:

Retirement boards must follow PERAC's directives because of the statutory grant of power to PERAC to issue such directives in order to ensure that the more than one hundred retirement systems in the Commonwealth operate efficiently and apply uniform rules and policies.

The Division of Administrative Law Appeals (DALA) applied this principle in *O'Leary v. Lexington Ret. Bd.*, and *PERAC*, CR-15-30 (DALA 2016) which dealt with the Lexington Retirement Board (LRB) assertion that it was not bound by PERAC's memoranda.

DALA rejected that argument stating: "While the Board is free to challenge PERAC's interpretation of Chapter 32 that it memorializes in a memorandum, it cannot simply ignore PERAC's memoranda."

In issuing these memoranda, PERAC seeks to ensure that there is uniform application of the complex provisions of Chapter 32 as set forth and as interpreted by DALA, CRAB, and the courts. We consider the positions of all affected parties, as far as practicable, and encourage boards to provide input regarding existing as well as prospective memoranda.

In conclusion, I want to say it is with deep sadness that the Commission has dedicated this Report to Ken Donnelly, in whose passing we have lost our most faithful defender of the interests of public employees, retirees, and their beneficiaries. Continuing Ken's fight for those interests is, perhaps, the best way for us to be faithful to his memory.

Sincerely,



Philip Y. Brown
Chairman



LETTER FROM *the Executive Director*



The Commission and staff are pleased to release this Annual Report on the Massachusetts Public Retirement Systems for 2016, a year in which surprising electoral results were accompanied by a solid capital market performance.

The investment performance outlined herein provides a counter to the assertions that investment return assumptions used in conducting actuarial valuations of the retirement systems are unrealistic and need to be dramatically reduced. Investment returns in 2016 again generally mirrored the markets and for most retirement boards either met or were close to actuarial assumptions. As has been consistently the case for many years, long term returns remained, in general, above assumptions. Consequently, as these assumptions are reviewed, we can confidently face the challenges ahead.

As PERAC Actuary Jim Lamenzo constantly reminds us, these are long range assumptions and not based on the experience of one or two years. PERAC recognizes the importance of this assumption and has been working with the retirement boards to reduce that expectation in a measured and substance driven manner. This contrasts with the fevered and agenda driven assertions of those advocating a swift and dramatic reduction in spite of the lack of supporting long term evidence.

Beyond the investment assumption, PERAC and the retirement boards have continued to update mortality tables and adapted to new accounting standards. As a result the Massachusetts public pension system stands in contrast to many systems across the country that, due to poor plan construction, failure to properly fund, and truly unrealistic actuarial assumptions, stand on the verge of collapse.

COMMISSION/STAFF CHANGES

Vacant positions in the Audit Unit were filled with the hiring of Elaine Pursley, CPA, Carol Poladian, CPA, Teresa Coley, and Richard Wrona, CPA. Elaine is a Certified Public Accountant with over 25 years of auditing experience in the private sector. Carol is a Certified Public Accountant with over 25 years experience with private sector audit firms. Teresa holds a Bachelor's Degree in Accounting and most recently worked as a Senior Corporate Tax Auditor with the Oregon Department of Revenue. Richard is a Certified Public Accountant with over 30 years in public sector auditing, working at the State Auditor's Office as an Assistant Audit Manager.

Lastly, to assist with the development of PERAC's PROSPER Computer System, we recently hired John Philley to fill the position of .net Developer. John has over 20 years' experience designing, programming, and developing computer applications in the private sector.

FEE REPORT

PERAC once again published a compilation of the fees paid by the pension systems to investment vendors. The report consisted of the Schedule 7 filed by each Board as part of its Annual Statement of Financial Condition.

According to these submissions (some of which were incomplete or needed adjustment) retirement boards paid \$400 million to investment service providers in 2015. For the State and Teachers' funds, which are invested by the Pension Reserves Investment Management Board (PRIM), \$257.3 million in fees were incurred. Local retirement boards paid \$143.6 million to money managers, banks and investment consultants as well as PRIM.

The Annual Fee Report enables retirement boards to make comparisons between fees the board pays in connection with a particular manager or fund and the fee other boards pay in connection with the same manager or fund. Armed with that information a board can discern discrepancies between fee schedules and hopefully realize savings in the event it is paying more than its peers for the same service or product. In fact, in one instance a retirement board, upon bringing such a discrepancy to the attention of the service provider, realized an immediate \$40,000 savings.

The level of cost in and of itself is neither a positive or negative but must be assessed in the context of returns, as performance may justify cost.



PERAC published their second compilation of the fees paid by the pension systems to investment vendors.

It should also be emphasized that retirement boards must conduct their own analysis of the fees paid or expected to be paid in connection with investment activities. Over the last few years, our analysis has found that service providers often are unclear about not only the costs to the system, but also the manner in which payment is made.

VENDOR DISCLOSURES

For several years, PERAC and the retirement boards have been receiving Annual Vendor Disclosure Forms from various vendors providing investment related services. This is another source of information relating to the amounts that may be paid to and amounts that may be paid by these vendors as a result of their relationship with a retirement board. These Disclosures reveal payments made by the vendor for marketing efforts. In some cases those payments have amounted to \$500,000 a year.

Retirement boards should conduct a review of these filings at a public meeting to assure maximum transparency.

EMERGING ISSUES FORUM

PERAC held its Twelfth Emerging Issues Forum at the College of the Holy Cross in September 2016. Over 250 people participated and board members attending received three educational credits. The keynote address by former GIC Director Dolores Mitchell provided attendees with a unique perspective on her many years of state service and the importance of a commitment to public service. Dolores represents the finest tradition of that service and we thank her for her remarks as well as for her efforts on behalf of public employees and retirees.



Joe Connarton introduces Emerging Issues Forum keynote speaker, retired GIC Executive Director, Dolores Mitchell

Mark Abrahams of The Abrahams Group and Jim Lamenzo, PERAC's Actuary, kicked off the presentations with a discussion on Other Post Employment Benefits (OPEB). Mr. Abrahams focused on setting up an OPEB Trust and reviewed the potential impact of recent GASB statements on unfunded liabilities. Jim highlighted PERAC's OPEB Summary Report which contains OPEB Unfunded Liability for Massachusetts governmental units. Following that PERAC Deputy General Counsel Judith Corrigan, Disability Manager of Medical Services Kate Hogan, and Nurse Manager Patrice Looby provided a step-by-step overview of the disability application process, including the post approval



Terence M. Keane, Ph.D. gives a presentation on the status of the field of Post-Traumatic Stress Disorder

stage. Helpful hints for ensuring a smooth handling of the cases was also provided. As part of the disability presentation Dr. Terence Keane, from the Veterans Administration National Center for Post Traumatic Stress Disorders (PTSD) discussed the approach the VA is taking to care for PTSD patients through psychological and pharmacological treatment. To wrap up the Forum Jim Lamenzo and PERAC Senior Actuarial Associate, John Boorack, presented “The Pension Crisis, Looking Back and Looking Forward”, focusing on the relationship between individual actuarial assumptions and unfunded liabilities. A primary emphasis was the need for governmental units to make appropriations as determined by funding schedules.

PROSPER

As I mentioned last year, the Commission has been working on a dramatic and ambitious overhaul of the way it interacts with retirement board members and staff on a day-to-day basis. The goal of the project is to create more efficient business processes for both PERAC and retirement boards through the use of self-service portals, electronic signatures, and a centralized database. In April, we began the phase-in of the PROSPER Portal Project, which is now up and running for Compliance and Disability. Thus far the rollout has been well received.

We will be going live with other areas in the coming year. We firmly believe that following a reasonable learning curve period, a dramatic simplification of our interaction with board administrators, board members, and vendors will be achieved.



Patrice Looby, Kate Hogan and Judith Corrigan during the Disability Retirement Panel at the 12th Annual Emerging Issues Forum

EDUCATION

One of the true success stories of recent years has been the implementation of the mandatory education provisions of Chapter 176 of the Acts of 2011. Through its fifth year that program has seen nearly 8,000 course completions by retirement board members. These include 4,781 attendees at PERAC approved conferences including MACRS, 1,756 attendees at stand alone PERAC events, 1,141 completions of Ethics Commission and Attorney General courses, and 114 completions of webinars.

CONCLUSION

This Report is dedicated to former PERAC Commissioner Ken Donnelly. That dedication is a small way for PERAC and its staff to remember Ken as we go through our daily tasks. For those who worked with Ken, his intellect, commitment, and sincerity will serve as an inspiration. Beyond that working relationship for me and so many others, Ken was a supportive, caring and loyal friend. His loss is already being felt on a professional, but most importantly, on a personal level.

Sincerely,

Joseph E. Connarton

Joseph E. Connarton
Executive Director



MASSACHUSETTS CONTRIBUTORY RETIREMENT BOARD PROFILES

INTRODUCTION

The Board Profile section of the PERAC Annual Report provides a detailed assessment of some of the important indicators relative to the financial health of the retirement systems. The information provided in this report can enable board members to provide factual comment and advice to policymakers as various proposals relative to the retirement law are assessed. Through this and other studies, the Commission seeks to provide objective, comprehensive, and accurate data for use by all interested parties.

A WORD ON PORTFOLIO VALUATIONS

In assessing investment performance, PERAC relies on the retirement boards to submit accurate and complete information about investment activity. PERAC numbers might differ from those provided to a board by its consultant because PERAC measures all assets, including monies not committed to investment management.

Asset allocation is presented in graph form. The Key used for the Asset Allocation graphs is shown in the preceding chart.

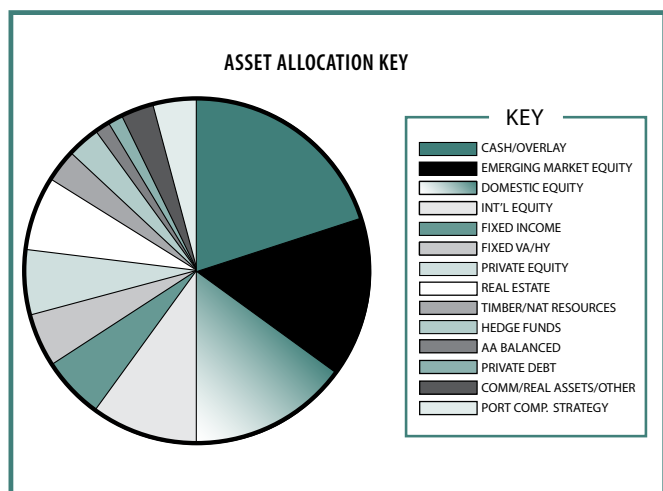
The way a board allocates its assets among the various investment classes available to it has long been recognized as the prime determining factor in the generation of returns. Allocation information reported by the investment consultants advising the retirement boards or PRIM forms the basis of these graphs. PERAC has not independently confirmed the accuracy of this data.

ACTUARIAL

As always, actuarial information details the fiscal condition of the systems, which can play a direct role in state and local budgets. The funded ratio indicates the extent to which assets cover system liabilities. When the system will pay off its unfunded liability and what type of funding technique is being used are also noted. PERAC has consistently urged boards to conduct actuarial valuations in order to provide an up-to-date assessment of the fiscal condition of the system.

The Funding Schedule item reflects the amortization schedule for the Unfunded Actuarial Liability (UAL). For example, 1.5% increasing with a year fully funded of 2030 means the UAL is being amortized on a 1.5% annually increasing basis to FY30.

A number of systems utilize phase-in schedules in which payments increase more rapidly over the first few years of the schedule than later in the schedule. We reflect those schedules using the ultimate amortization schedule and note there is a phase-in. For example, 4.0% Increasing Phase-In with a year fully funded of 2035 means the total appropriation increases by a certain percent per year for a period of time and then the remaining unfunded liability is amortized on a 4.0% annual increasing basis until FY35.

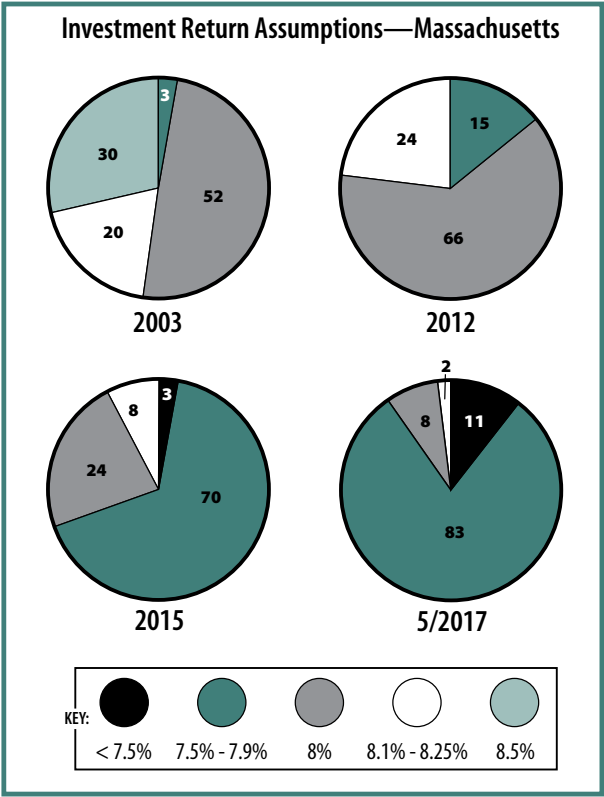


Fourteen systems currently use a phase-in approach and both the percentage increase and number of years before the amortization begins vary. Schedules described as “Total Increasing” mean the annual appropriation increases by the amount indicated, which may vary, for the entire schedule. Sixty-four systems have such a schedule. In total, three-quarter of systems utilize a phase-in and/or total increasing schedule.

We have not reflected any 2017 valuation results in this report.

In the actuarial area, PERAC approved 62 revised funding schedules and completed 21 actuarial valuations in 2016. The valuations complemented the 50 valuations performed by private actuaries. The Actuarial Unit also completed the annual actuarial valuation of the Commonwealth’s pension liability. Throughout the year, PERAC responded to legislative and gubernatorial requests for analysis of legislation and made presentations at several forums.

The Massachusetts Investment Return Assumptions from 2003 to present are illustrated below.



LEGAL UNIT

PERAC’s Legal Unit, in addition to representing the Commission at all levels including the Supreme Judicial Court, issued 198 Legal Opinions and reviewed 616 disabilities in 2016.

MEDICAL PANELS/POST RETIREMENT EARNINGS

In addition to the information detailed in the Profiles, PERAC, as always, has been busy assisting the boards in other areas. In 2016, 659 medical panel requests were processed and 1,356 comprehensive medical evaluations were conducted. This led to the approval of 499 disability applications and 76 accidental death claims. 30 medical re-examinations of disability retirees took place.

Such medical evaluations and examination resulted in 3 members returning to work saving \$123,115.

PERAC is responsible for the post-retirement monitoring of disabled retirees. One aspect of that task is enforcing the earnings limits set forth in Chapter 32. In 2016, PERAC analyzed 15,895 earnings reports, 3,849 retirees reported earnings and 54 earned in excess of the statutory limits. An additional 101 retirees failed to comply with the reporting requirement. This resulted in the identification of \$839,993 in excess earnings and \$2,606,471 for non-compliance. In addition 37 retirees waived their allowance, saving \$502,028.

No members’ retirement benefit was modified under the Commission’s Modification Policy in 2016. This review to date has resulted in the modification of 15 member retirement allowances. Savings due to that action total \$299,967 annually.

AUDITS

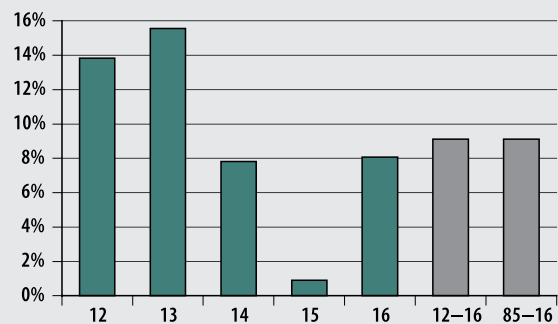
In 2016 PERAC published 24 audits of retirement systems. In addition, 20 follow-up audits were issued. In the last few years the Commission has awarded Certificates of Achievement to those systems found by our auditors to be operating in an exemplary fashion. In 2016 we issued 6 Certificates of Achievement. As always, PERAC audit staff conducted annual seminars on the preparation of the Annual Statement.

DISCLAIMER: In publishing this information PERAC makes no comment regarding any retirement boards’ asset allocation, investment strategy or manager/fund commitments.

COMPOSITE INVESTMENT PROFILE

- ▶ Commonwealth of Massachusetts
- ▶ Public Employee Retirement Systems and Pension Reserves Investment Trust

INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



INVESTMENT

▶ 2016 Return	8.08%
▶ 2016 Market Value	\$76.5B
▶ 2012-2016 (Annualized)	9.12%
▶ 1985-2016 (Annualized)	9.11%

Adams

Adams Visitor Center
3 Hoosac Street
Adams, MA 01220
Phone 413-743-5575
Fax 413-743-2815

Board Members

Bernard Pinsonnault (Chairperson),
Mary Beverly, George Haddad,
Allen Mendel, Patricia Wol

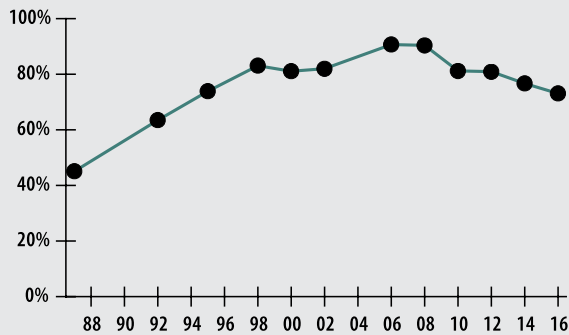
Board Administrator

Cheryl J. DeMarsico

Board Meeting

Fourth Monday of each month at 4:00 pm

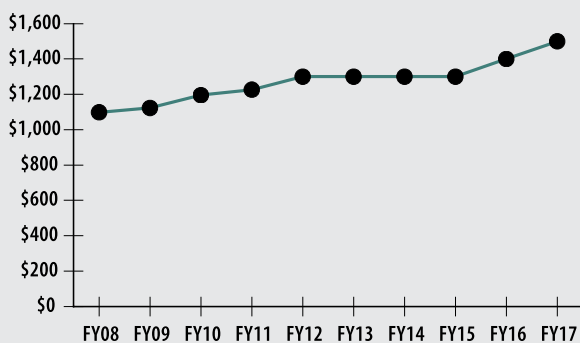
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

7.69%

31 years 2015

7.69%

30 years 2014

8.08%

10 years 2016

3.96%

10 years 2015

4.04%

10 years 2014

4.95%

5 years 2016

5.94%

5 years 2015

4.66%

5 years 2014

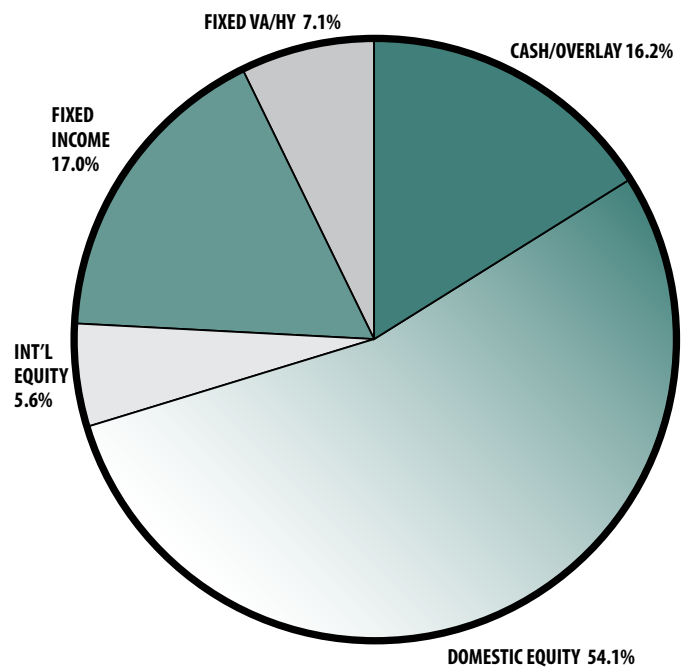
7.27%

ACTUARIAL

▶ Funded Ratio	73.1%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.00%
▶ Funding Schedule	5.0% Total Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$12.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$1.5 M

	ACTIVE	RETIRED
▶ Number of Members	186	146
▶ Total Payroll/Benefit	\$6.3 M	\$2.5 M
▶ Average Salary/Benefit	\$33,800	\$17,000
▶ Average Age	48	73
▶ Average Service	12.2 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	6
▶ Number Who Reported Earnings	1
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.58%
▶ 2016 Market Value	\$32.0 M
▶ 2012-2016 (Annualized)	5.94%
▶ 1985-2016 (Annualized)	7.69%

Amesbury

Town Hall
62 Friend Street
Amesbury, MA 01913-2825
Phone 978-388-8131
Fax 978-388-6727

Board Members

Donna Cornoni (Chairperson),
Michael Cronin, Bonniyo Kitchin,
James L. Lynch, Jr., David S. Van Dam,

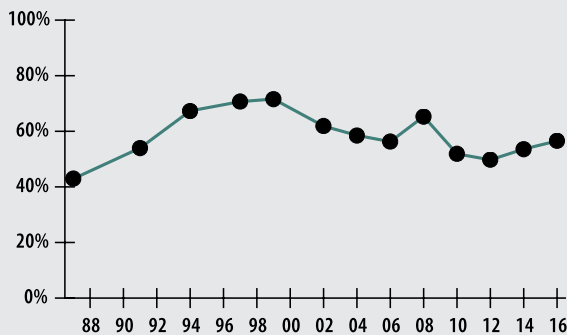
Board Administrator

Kevin Caira

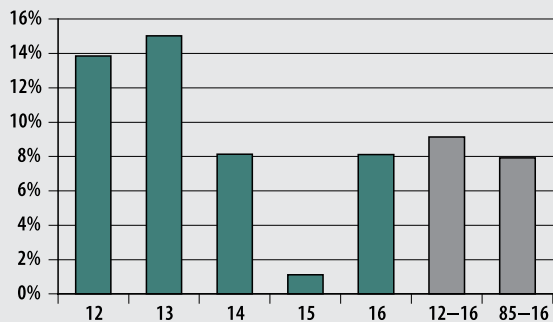
Board Meeting

Last Thursday of each month at 1:30 pm

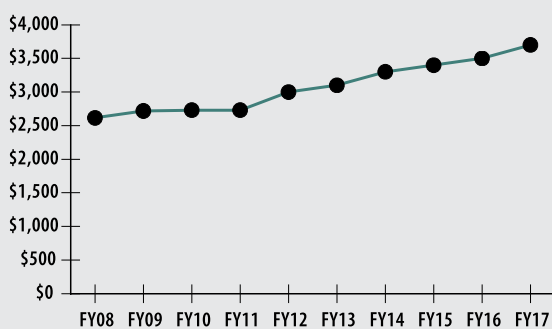
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

7.92%

31 years 2015

7.92%

30 years 2014

8.15%

10 years 2016

4.84%

10 years 2015

5.47%

10 years 2014

6.09%

5 years 2016

9.14%

5 years 2015

7.46%

5 years 2014

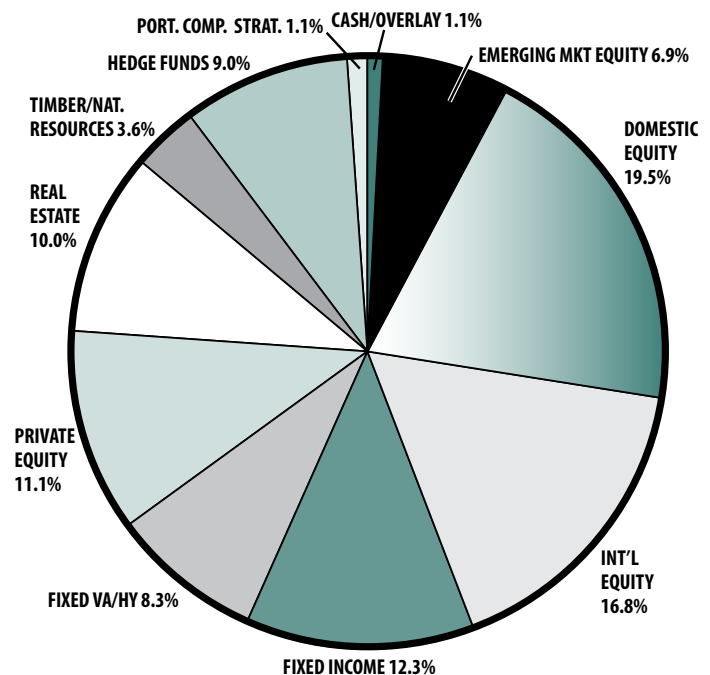
9.97%

ACTUARIAL

▶ Funded Ratio	56.6%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$38.2 M
▶ Total Pension Appropriation (Fiscal 2017)	\$3.7 M

	ACTIVE	RETIRED
▶ Number of Members	266	242
▶ Total Payroll/Benefit	\$13.4 M	\$5.5 M
▶ Average Salary/Benefit	\$50,500	\$22,900
▶ Average Age	NA	73
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	11
▶ Number Who Reported Earnings	6
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.12%
▶ 2016 Market Value	\$50.4 M
▶ 2012-2016 (Annualized)	9.14%
▶ 1985-2016 (Annualized)	7.92%

Andover

Town Offices
36 Bartlet Street
Andover, MA 01810
Phone 978-623-8540
Fax 978-623-8594

Board Members

James A. Cuticchia (Chairperson),
Elena M. Kothman, Thomas P. Hartwell,
Donna Walsh, Anthony K. Stankiewicz, Esq.

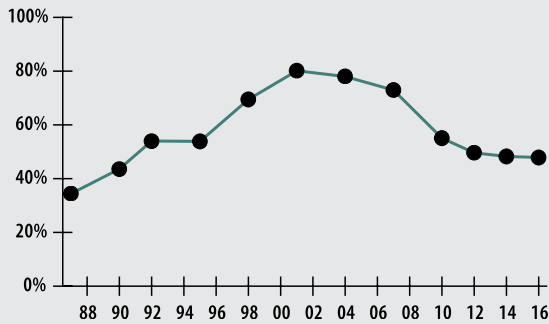
Board Administrator

Elena M. Kothman

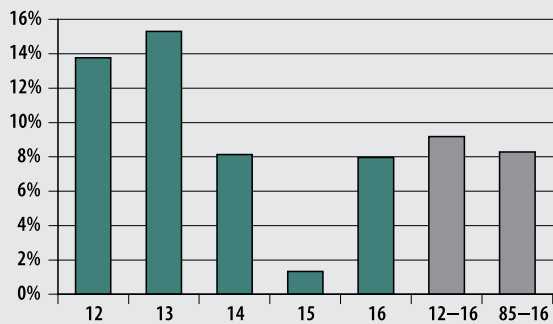
Board Meeting

Day and date vary

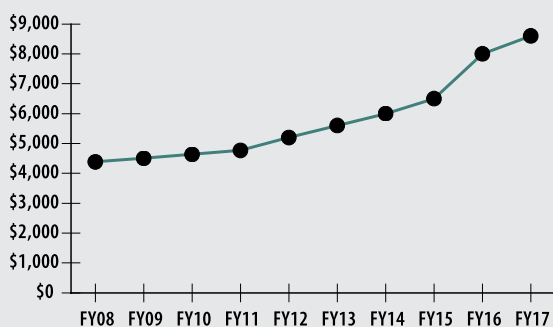
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

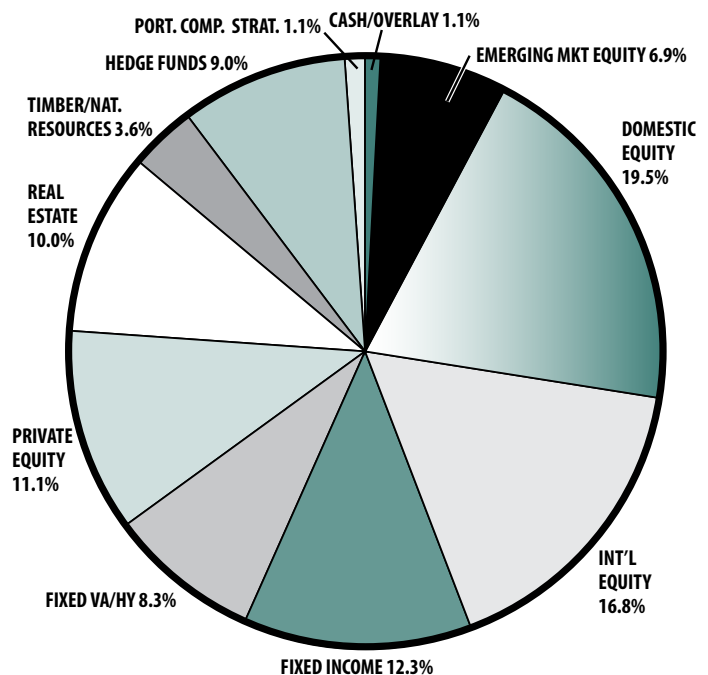
32 years 2016 8.28%	31 years 2015 8.29%	30 years 2014 8.53%
10 years 2016 4.46%	10 years 2015 5.06%	10 years 2014 5.61%
5 years 2016 9.19%	5 years 2015 7.59%	5 years 2014 10.08%

ACTUARIAL

▶ Funded Ratio	47.9%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.25%
▶ Funding Schedule	10.0% Total Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$128.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$8.6 M

	ACTIVE	RETIRED
▶ Number of Members	728	432
▶ Total Payroll/Benefit	\$38.6 M	\$12.3 M
▶ Average Salary/Benefit	\$53,000	\$28,500
▶ Average Age	49	NA
▶ Average Service	12.7 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	31
▶ Number Who Reported Earnings	9
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.97%
▶ 2016 Market Value	\$123.6M
▶ 2012-2016 (Annualized)	9.19%
▶ 1985-2016 (Annualized)	8.28%

Arlington

27 Maple Street, Suite G-11
Arlington, MA 02476-4701
Phone 781-316-3370
Fax 781-316-3379

Board Members

John J. Bilafer (Chairperson),
Kenneth Hughes, Richard Keshian,
Ken Steele, Richard J. Viscay

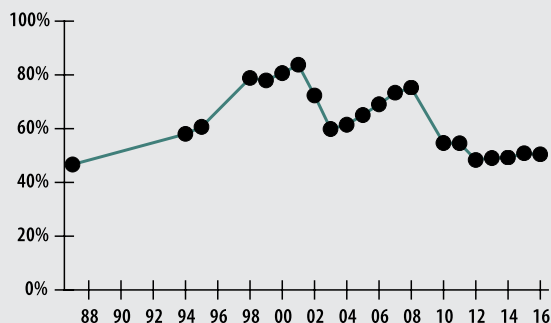
Board Administrator

Richard Greco

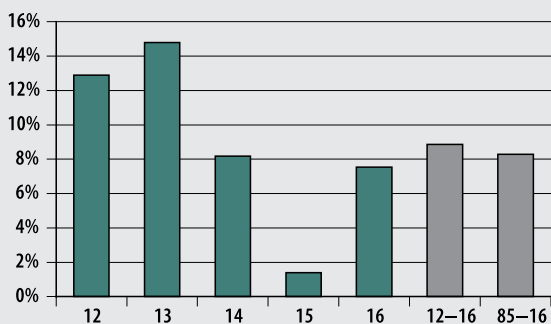
Board Meeting

Last Thursday of the month

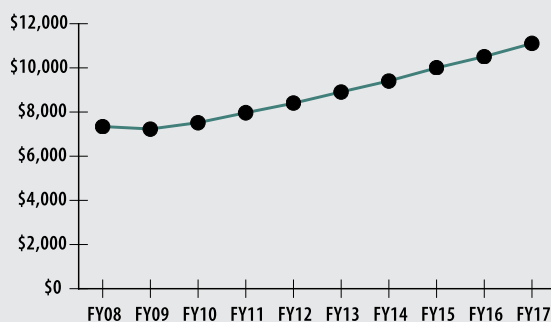
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.29%

31 years 2015

8.32%

30 years 2014

8.56%

10 years 2016

3.80%

10 years 2015

4.45%

10 years 2014

4.87%

5 years 2016

8.86%

5 years 2015

7.54%

5 years 2014

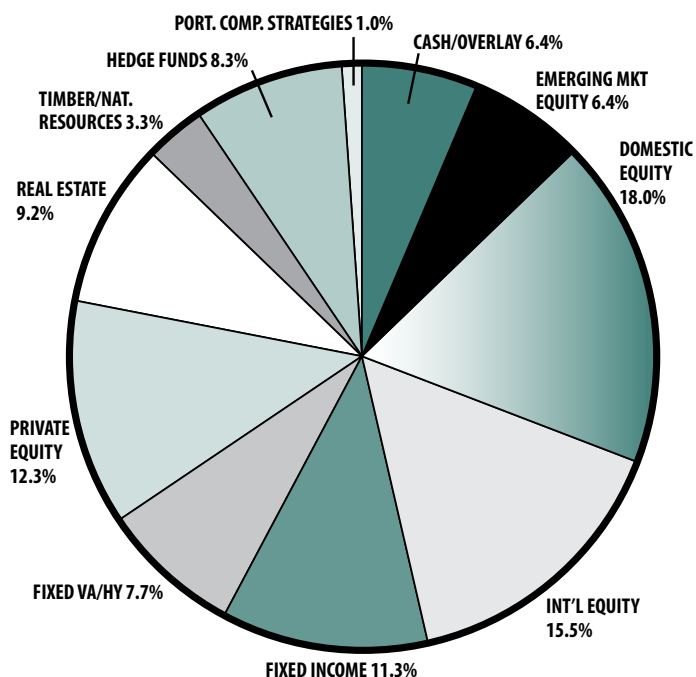
9.92%

ACTUARIAL

▶ Funded Ratio	50.5%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.25%
▶ Funding Schedule	5.5% Total Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$134.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$11.1 M

	ACTIVE	RETIRED
▶ Number of Members	696	603
▶ Total Payroll/Benefit	\$34.7 M	\$16.9 M
▶ Average Salary/Benefit	\$49,900	\$28,100
▶ Average Age	47	75
▶ Average Service	11.0 years	NA

ASSET ALLOCATION (12/31/16)

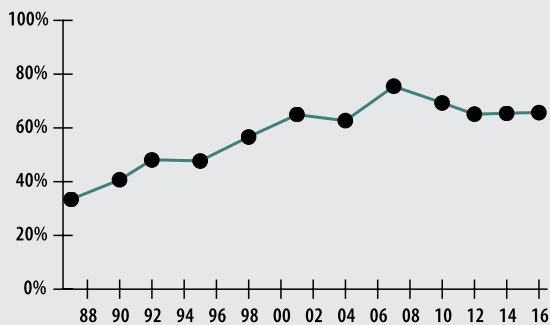


EARNED INCOME OF DISABILITY RETIREES (2015)

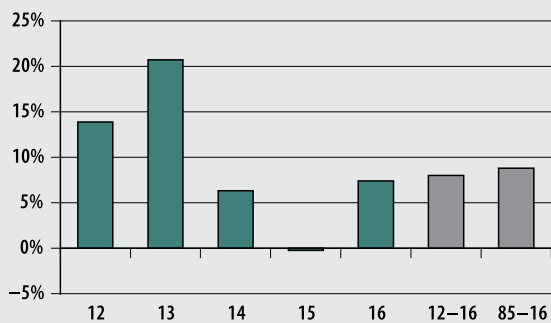
▶ Number of Disability Retirees	77
▶ Number Who Reported Earnings	19
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.55%
▶ 2016 Market Value	\$138.6M
▶ 2012-2016 (Annualized)	8.86%
▶ 1985-2016 (Annualized)	8.29%

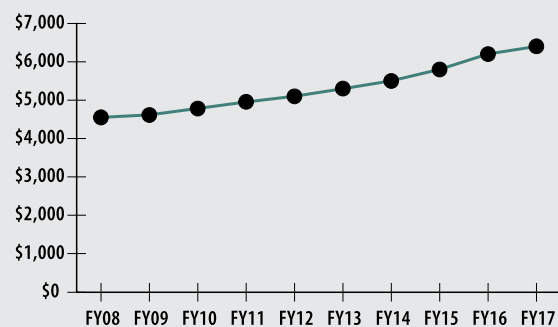
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

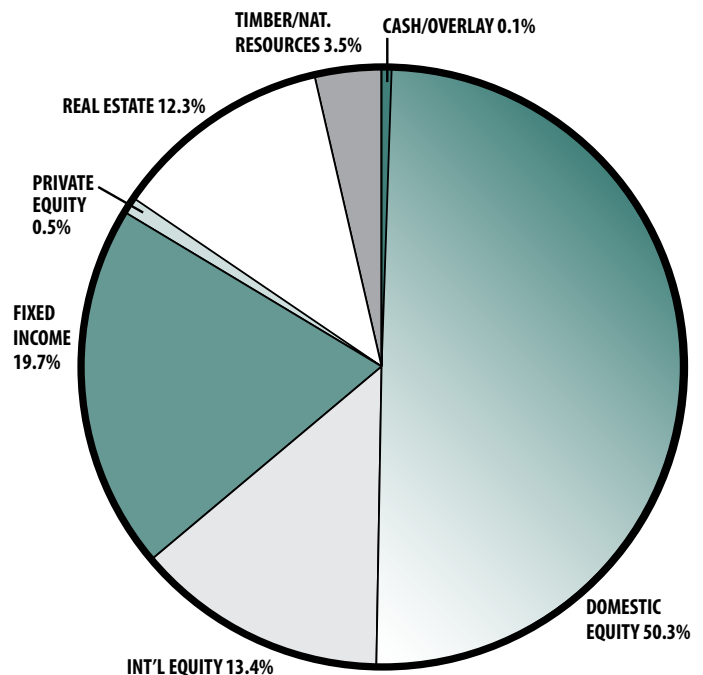
32 years 2016 8.82%	31 years 2015 8.87%	30 years 2014 9.18%
10 years 2016 5.64%	10 years 2015 6.19%	10 years 2014 7.22%
5 years 2016 9.40%	5 years 2015 7.94%	5 years 2014 11.26%

ACTUARIAL

▶ Funded Ratio	65.7%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.88%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2037
▶ Unfunded Liability	\$68.2 M
▶ Total Pension Appropriation (Fiscal 2017)	\$6.4 M

	ACTIVE	RETIRED
▶ Number of Members	630	415
▶ Total Payroll/Benefit	\$32.0 M	\$10.8 M
▶ Average Salary/Benefit	\$50,800	\$26,000
▶ Average Age	48	72
▶ Average Service	13.1 years	NA

ASSET ALLOCATION (12/31/16)

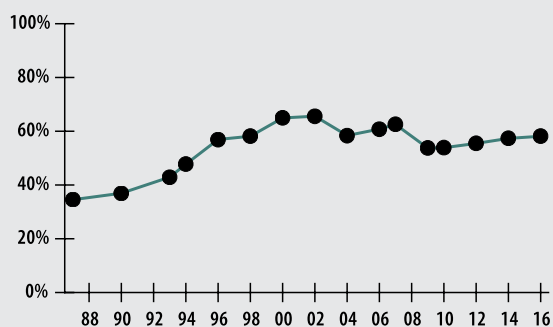


EARNED INCOME OF DISABILITY RETIREES (2015)

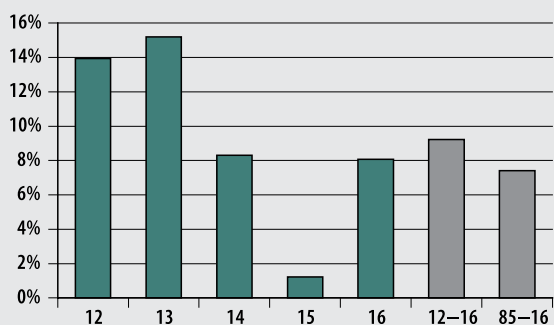
▶ Number of Disability Retirees	39
▶ Number Who Reported Earnings	11
▶ Number of Excess Earners	2
▶ Total Amount of Refund Due	\$30,640.84

▶ 2016 Return	7.40%
▶ 2016 Market Value	\$130.1 M
▶ 2012-2016 (Annualized)	9.40%
▶ 1985-2016 (Annualized)	8.82%

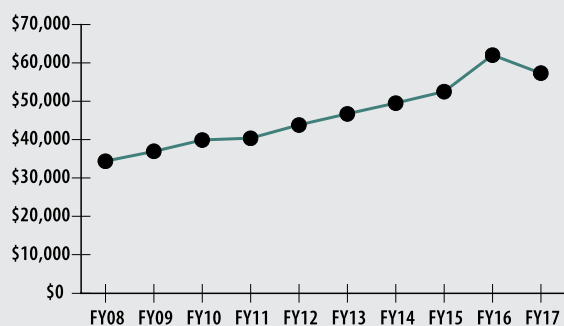
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
7.41%

31 years 2015
7.39%

30 years 2014
7.60%

10 years 2016
4.82%

10 years 2015
5.41%

10 years 2014
6.00%

5 years 2016
9.23%

5 years 2015
7.62%

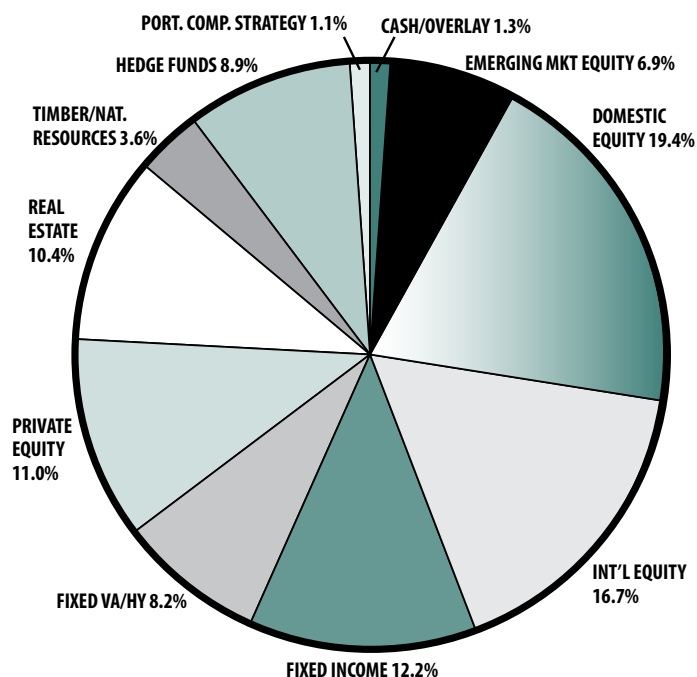
5 years 2014
10.12%

ACTUARIAL

▶ Funded Ratio	58.2%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.63%
▶ Funding Schedule	5.28% Total Increasing
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$653.0 M
▶ Total Pension Appropriation (Fiscal 2017)	\$57.3 M

	ACTIVE	RETIRED
▶ Number of Members	4,699	2,937
▶ Total Payroll/Benefit	\$269.7 M	\$73.6 M
▶ Average Salary/Benefit	\$57,400	\$25,000
▶ Average Age	49	NA
▶ Average Service	12.2 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	325
▶ Number Who Reported Earnings	116
▶ Number of Excess Earners	2
▶ Total Amount of Refund Due	\$78,586.18

▶ 2016 Return	8.07%
▶ 2016 Market Value	\$939.8M
▶ 2012-2016 (Annualized)	9.23%
▶ 1985-2016 (Annualized)	7.41%

Belmont

Town Hall
455 Concord Avenue
Belmont, MA 02478-0900
Phone 617-993-2792
Fax 617-993-2793

Board Members

Thomas F. Gibson, Esq. (Chairperson),
Floyd Carman, Chitra Subramanian,
Ross Vona, Walter D. Wellman

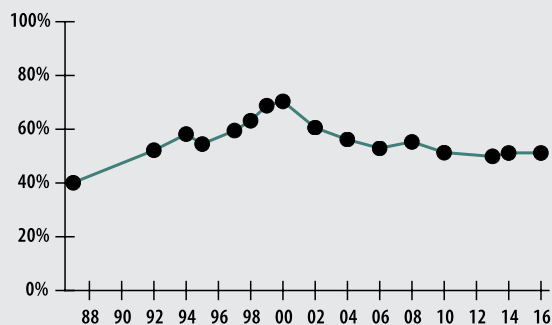
Board Administrator

Robert Soohoo

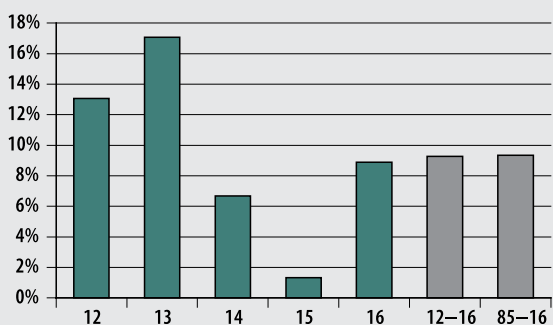
Board Meeting

Varies

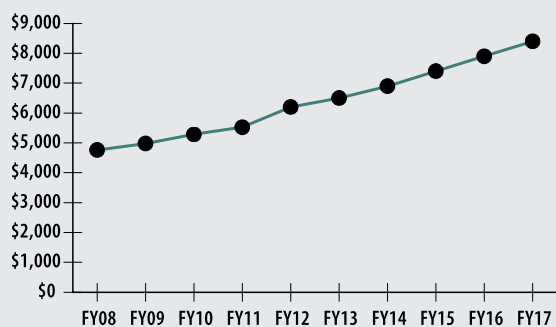
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.34%

31 years 2015

9.35%

30 years 2014

9.63%

10 years 2016

6.99%

10 years 2015

7.59%

10 years 2014

8.27%

5 years 2016

9.27%

5 years 2015

7.95%

5 years 2014

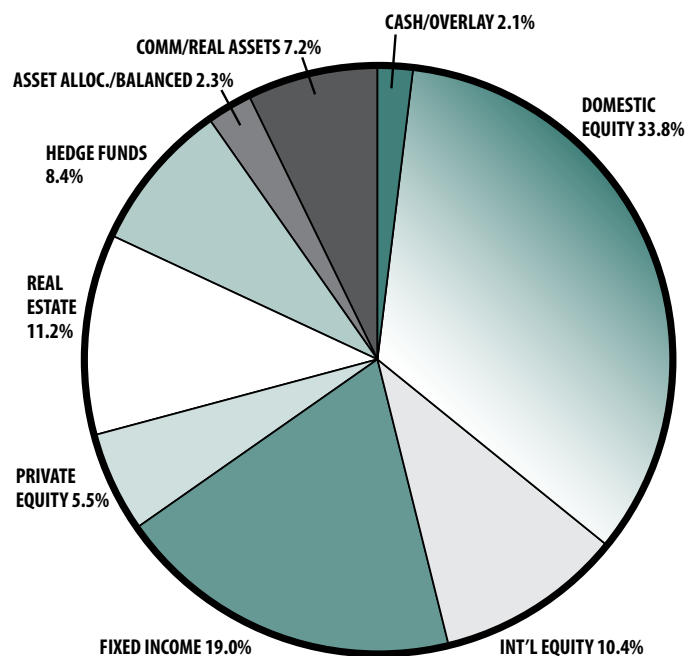
10.48%

ACTUARIAL

▶ Funded Ratio	51.2%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	6.97% Total Increasing
▶ Year Fully Funded	2029
▶ Unfunded Liability	\$73.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$8.4 M

	ACTIVE	RETIRED
▶ Number of Members	460	348
▶ Total Payroll/Benefit	\$25.0 M	\$10.0 M
▶ Average Salary/Benefit	\$54,400	\$28,700
▶ Average Age	46	74
▶ Average Service	11.7 years	NA

ASSET ALLOCATION (12/31/16)

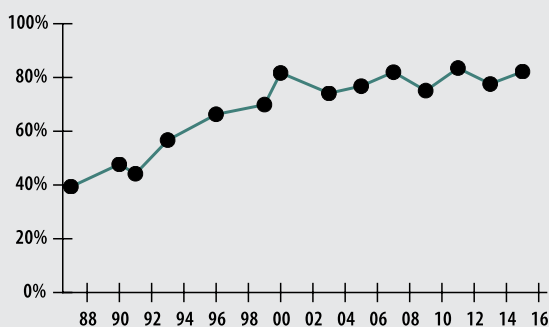


EARNED INCOME OF DISABILITY RETIREES (2015)

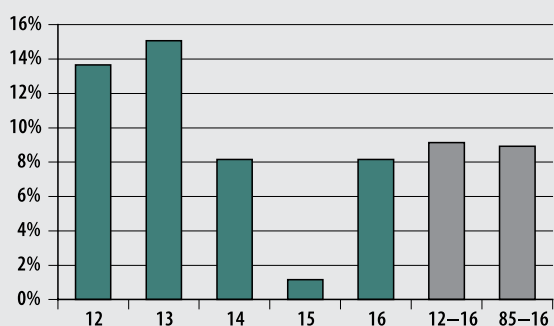
▶ Number of Disability Retirees	34
▶ Number Who Reported Earnings	10
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.89%
▶ 2016 Market Value	\$91.6M
▶ 2012-2016 (Annualized)	9.27%
▶ 1985-2016 (Annualized)	9.34%

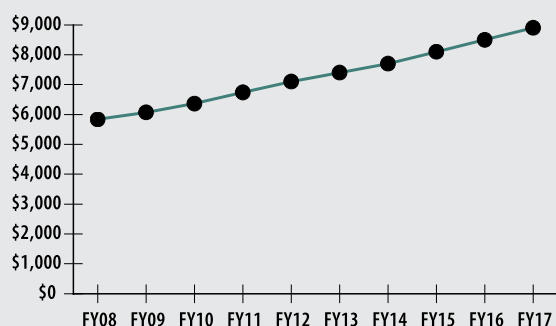
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

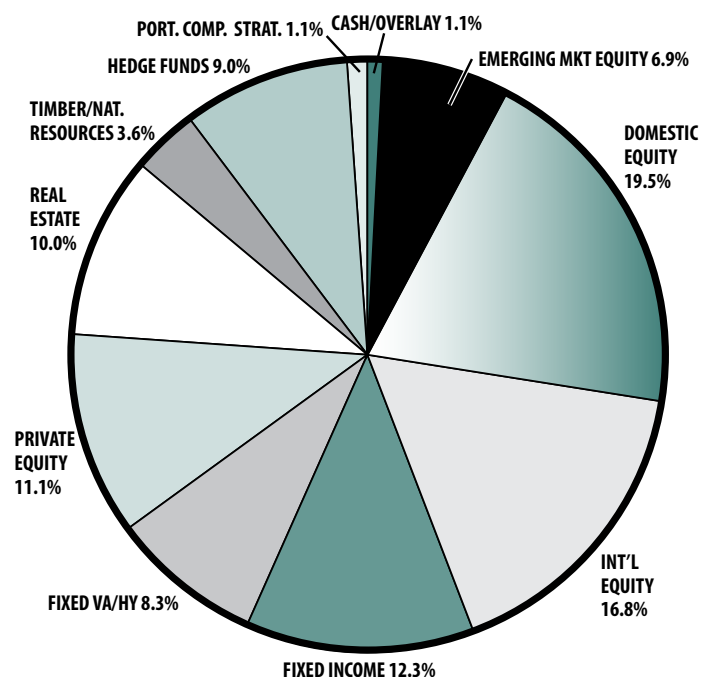
32 years 2016 8.92%	31 years 2015 8.95%	30 years 2014 9.22%
10 years 2016 5.10%	10 years 2015 5.90%	10 years 2014 7.04%
5 years 2016 9.13%	5 years 2015 7.50%	5 years 2014 9.97%

ACTUARIAL

▶ Funded Ratio	82.2%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.60%
▶ Funding Schedule	4.7% Total Increasing
▶ Year Fully Funded	2025
▶ Unfunded Liability	\$40.5 M
▶ Total Pension Appropriation (Fiscal 2017)	\$8.9 M

	ACTIVE	RETIRED
▶ Number of Members	1,134	728
▶ Total Payroll/Benefit	\$42.3 M	\$11.2 M
▶ Average Salary/Benefit	\$37,300	\$15,400
▶ Average Age	50	74
▶ Average Service	11.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	23
▶ Number Who Reported Earnings	5
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.15%
▶ 2016 Market Value	\$207.1M
▶ 2012-2016 (Annualized)	9.13%
▶ 1985-2016 (Annualized)	8.92%

Beverly

City Hall
191 Cabot Street
Beverly, MA 01915
Phone 978-605-2370
Fax 978-921-8582

Board Members

John F. Lane, Jr. (Chairperson),
Carol I. Augulewicz, Bryant Ayles,
Richard F. Pierce, Kevin D. Smith

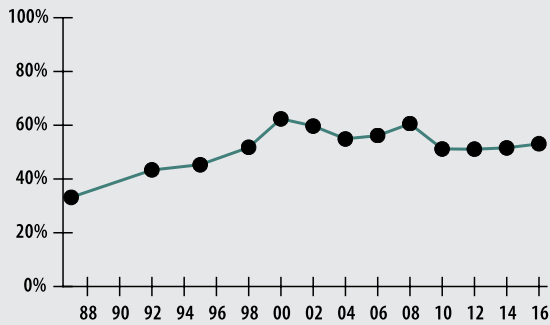
Board Administrator

Barbara Wells

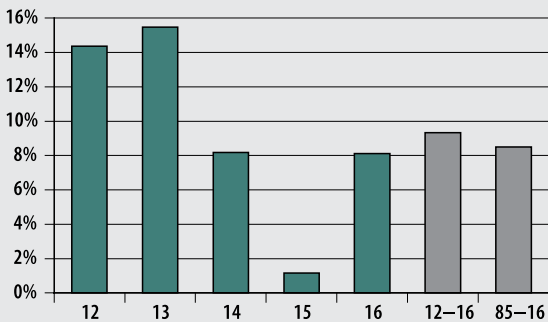
Board Meeting

Last Thursday of each month

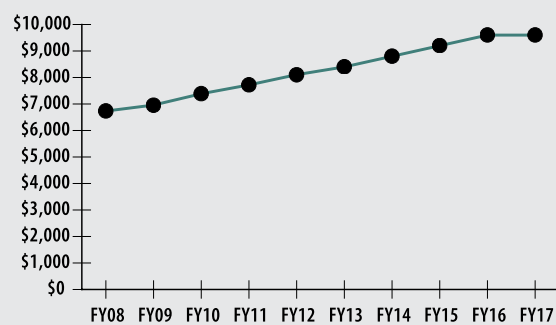
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.49%

31 years 2015

8.50%

30 years 2014

8.76%

10 years 2016

4.92%

10 years 2015

4.86%

10 years 2014

5.38%

5 years 2016

9.34%

5 years 2015

7.70%

5 years 2014

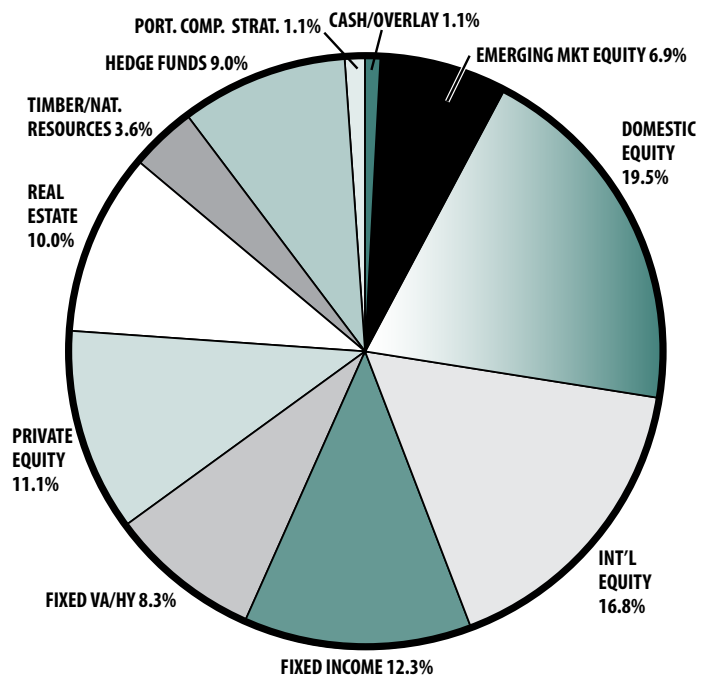
10.23%

ACTUARIAL

▶ Funded Ratio	53.1%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	4.45% Total Increasing
▶ Year Fully Funded	2033
▶ Unfunded Liability	\$92.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$10.1 M

	ACTIVE	RETIRED
▶ Number of Members	576	448
▶ Total Payroll/Benefit	\$27.5 M	\$12.0 M
▶ Average Salary/Benefit	\$47,700	\$26,800
▶ Average Age	49	73
▶ Average Service	11.6 years	NA

ASSET ALLOCATION (12/31/16)

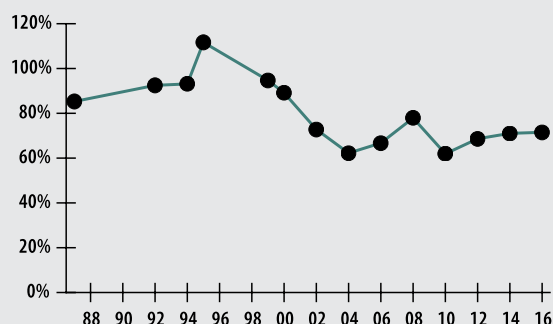


EARNED INCOME OF DISABILITY RETIREES (2015)

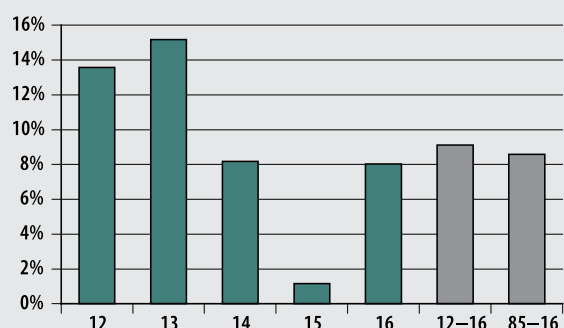
▶ Number of Disability Retirees	45
▶ Number Who Reported Earnings	11
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.11%
▶ 2016 Market Value	\$106.5M
▶ 2012-2016 (Annualized)	9.34%
▶ 1985-2016 (Annualized)	8.49%

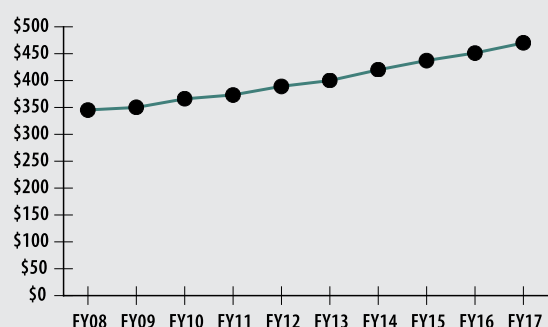
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

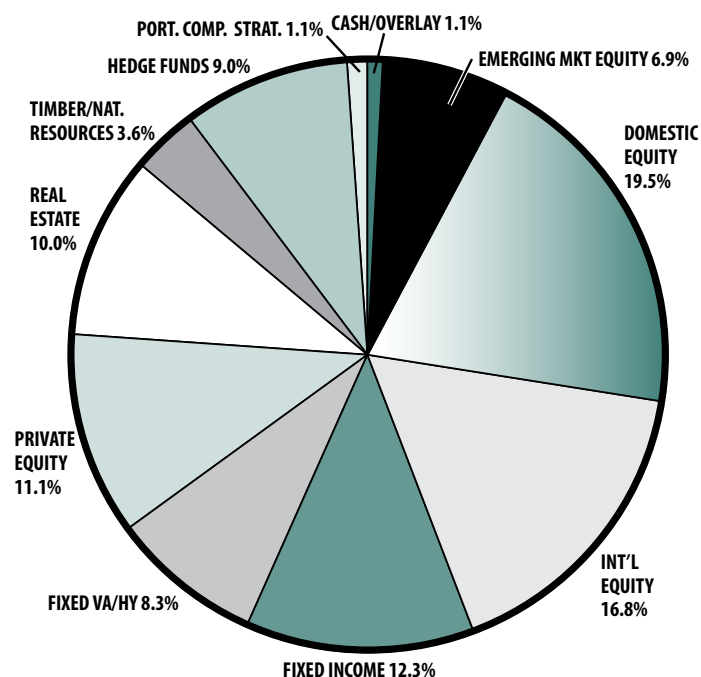
32 years 2016 8.59%	31 years 2015 8.61%	30 years 2014 8.87%
10 years 2016 5.22%	10 years 2015 5.99%	10 years 2014 7.12%
5 years 2016 9.11%	5 years 2015 7.55%	5 years 2014 10.04%

ACTUARIAL

▶ Funded Ratio	71.5%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.6% Total Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$3.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$470,000

	ACTIVE	RETIRED
▶ Number of Members	47	55
▶ Total Payroll/Benefit	\$2.3 M	\$1.0 M
▶ Average Salary/Benefit	\$47,900	\$18,500
▶ Average Age	51	78
▶ Average Service	9.4 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	0
▶ Number Who Reported Earnings	0
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.03%
▶ 2016 Market Value	\$10.0M
▶ 2012-2016 (Annualized)	9.11%
▶ 1985-2016 (Annualized)	8.59%

Boston (City)

City Hall
Room 816
Boston, MA 02201
Phone 617-635-4305
Fax 617-635-4318

Board Members

Daniel J. Greene, Esq. (Chairperson),
Sally D. Glora, Thomas V. J. Jackson,
Michael W. McLaughlin, Michael D. O'Reilly

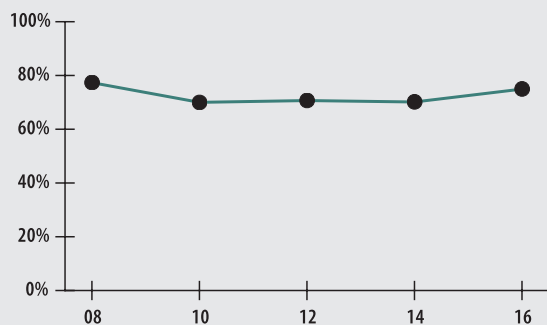
Board Administrator

Timothy J. Smyth

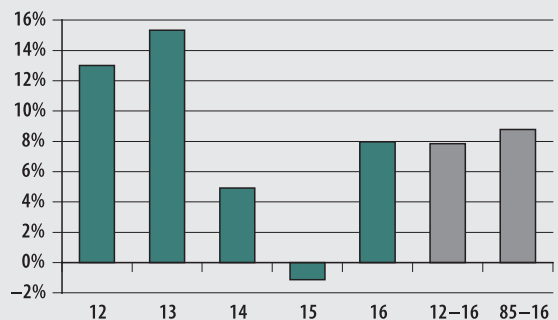
Board Meeting

Third Wednesday of each month
at 10:00 am

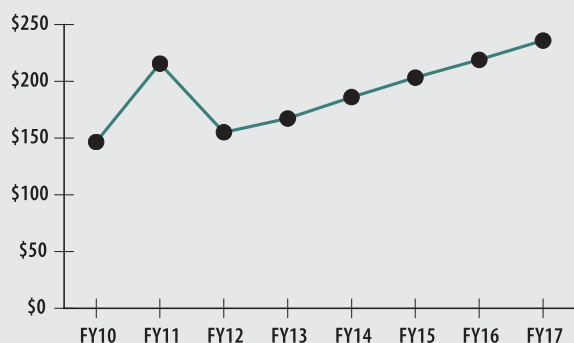
FUNDED RATIO (2008-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN MILLIONS)



INVESTMENT RETURN HISTORY

32 years 2016
8.79%

31 years 2015
8.82%

30 years 2014
9.17%

10 years 2016
5.28%

10 years 2015
5.96%

10 years 2014
6.95%

5 years 2016
7.86%

5 years 2015
6.40%

5 years 2014
9.39%

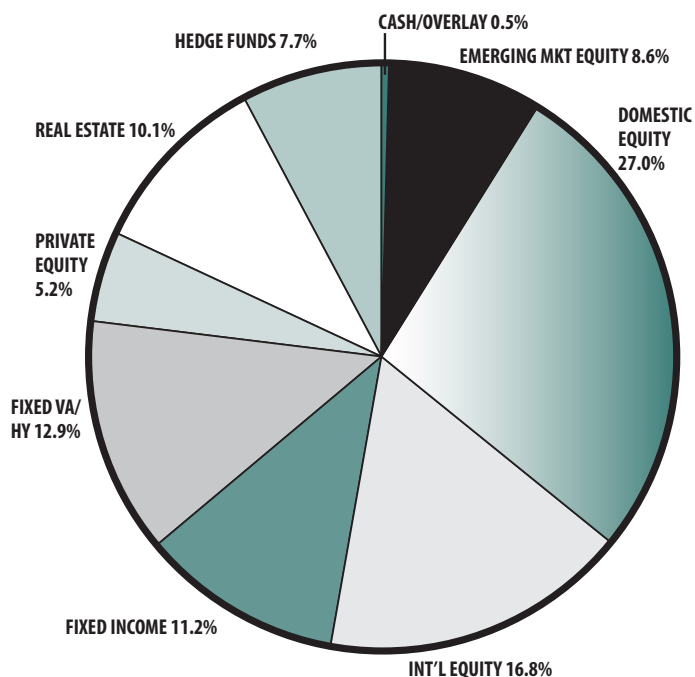
SEE NOTES ON NEXT PAGE FOR BOSTON (CITY) &
BOSTON TEACHERS

ACTUARIAL

▶ Funded Ratio	75.0%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	8.85% Total Increasing
▶ Year Fully Funded	2025
▶ Unfunded Liability	\$1.5 B
▶ Total Pension Appropriation (Fiscal 2017)	\$235.8 M

	ACTIVE	RETIRED
▶ Number of Members	14,288	9,856
▶ Total Payroll/Benefit	\$909.1 M	\$321.7 M
▶ Average Salary/Benefit	\$63,600	\$32,600
▶ Average Age	47	74
▶ Average Service	14.0 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	1535
▶ Number Who Reported Earnings	279
▶ Number of Excess Earners	11
▶ Total Amount of Refund Due	\$172,813.40

▶ 2016 Return	7.97%
▶ 2016 Market Value	\$4.4B
▶ 2012-2016 (Annualized)	7.86%
▶ 1985-2016 (Annualized)	8.79%

Boston Teachers

City Hall
Room 816
Boston, MA 02201
Phone 617-635-4305
Fax 617-635-4318

Board Members

Daniel J. Greene, Esq. (Chairperson),
Sally D. Glora, Thomas V. J. Jackson,
Michael W. McLaughlin, Michael D. O'Reilly

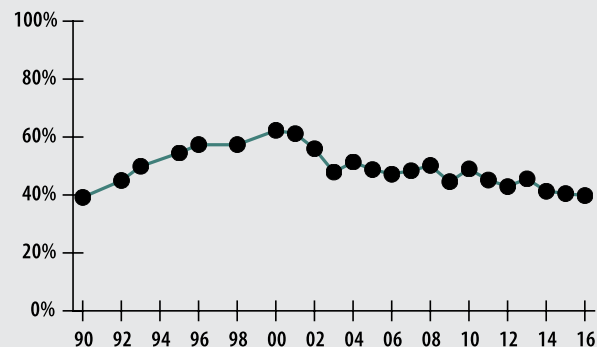
Board Administrator

Timothy J. Smyth

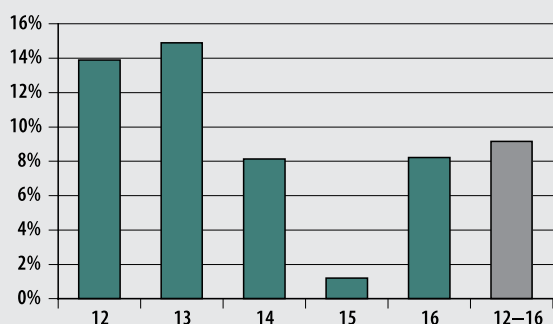
Board Meeting

Third Wednesday of each month
at 10:00 am

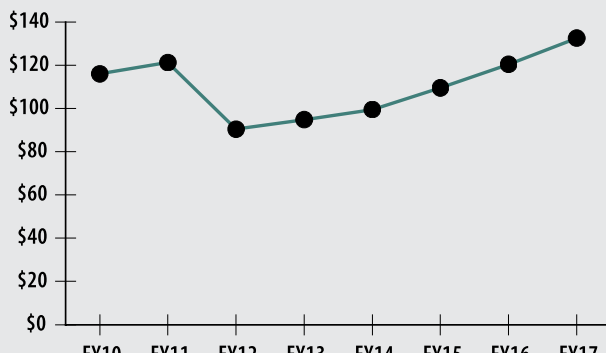
FUNDED RATIO (1990-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN MILLIONS)



NOTES — BOSTON (CITY) & BOSTON TEACHERS

In this report we have separated the results for Boston Teachers and non-teachers (City). The liability for Boston Teachers has always been the responsibility of the Commonwealth. In 2010, legislation was enacted that allocated assets to Boston Teachers and separate accounts have been maintained since that date. The actuarial information for the City now solely reflects liability that is the responsibility of the City. The Funded Ratio and History of Appropriations charts for the City and the History of Appropriations chart for the Boston Teachers reflect information available since that allocation. Please note the following when reviewing the charts on these pages:

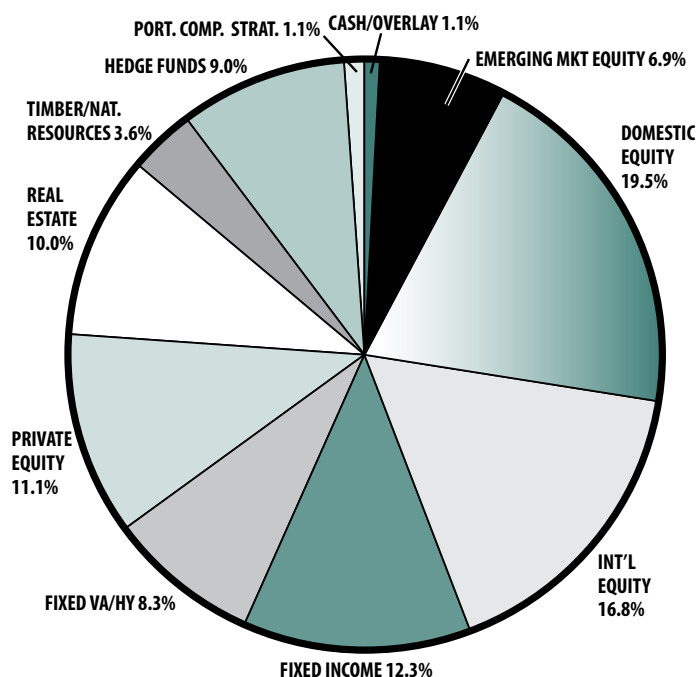
- ▶ Boston Teachers' assets prior to 2010 were estimated as approximately 30% of Boston (System) total assets.
- ▶ The information with respect to Disability Retirees on the City Board Profile page reflects the entire system, including Boston Teachers.
- ▶ The information with respect to Investment Return History for the City reflects actual returns for Boston (City) for 2012-2016 and total returns for the Boston System prior to 2011.

ACTUARIAL

▶ Funded Ratio	39.8%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	8.94% Total Increasing
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$2.2 B
▶ Total Pension Appropriation (Fiscal 2017)	\$132.5 M

	ACTIVE	RETIRED
▶ Number of Members	6,192	4,593
▶ Total Payroll/Benefit	\$521.7 M	\$230.0 M
▶ Average Salary/Benefit	\$84,300	\$50,100
▶ Average Age	43	72
▶ Average Service	11.9 years	NA

ASSET ALLOCATION (12/31/16)



▶ 2016 Return	8.23%
▶ 2016 Market Value	\$1.5B
▶ 2012-2016 (Annualized)	9.16%

Board Members

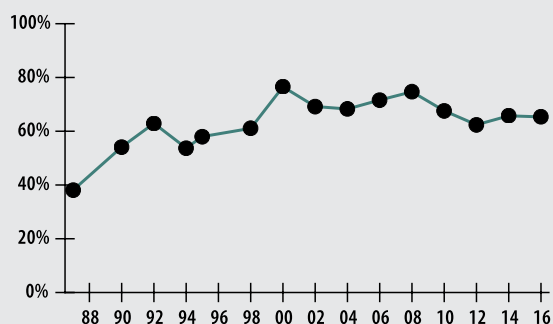
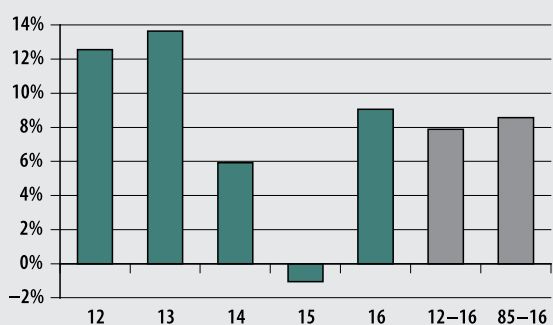
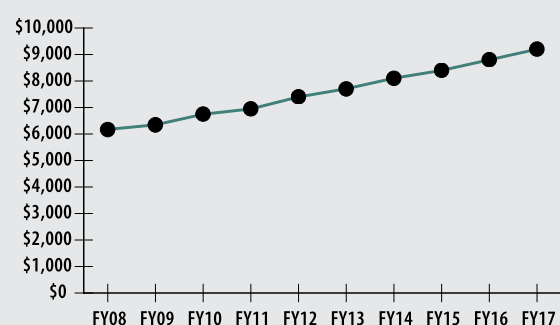
Gerald J. Kenny, Jr. (Chairperson),
David J. Delgallo, Peter J. Morin,
Edward J. Spellman, Jr.

Board Administrator

Dennis Gallagher

Board Meeting

Fourth Wednesday of each month

FUNDED RATIO (1987-2016)

INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)

10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)

INVESTMENT RETURN HISTORY
32 years 2016

8.57%

31 years 2015

8.56%

30 years 2014

8.89%

10 years 2016

5.35%

10 years 2015

5.81%

10 years 2014

6.57%

5 years 2016

7.89%

5 years 2015

6.26%

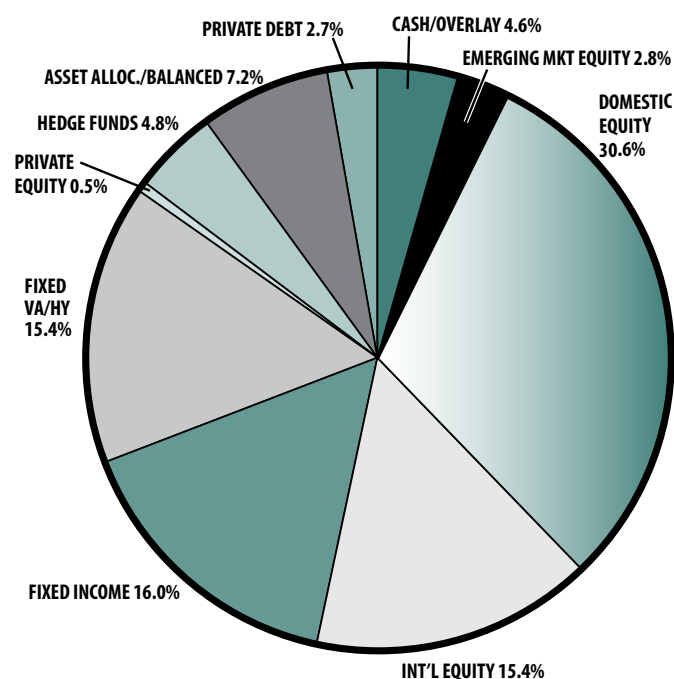
5 years 2014

8.81%

ACTUARIAL

▶ Funded Ratio	65.4%
▶ Date of Last Valuation	01/16
▶ Actuary	KMS Actuaries
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2033
▶ Unfunded Liability	\$94.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$9.2 M

	ACTIVE	RETIRED
▶ Number of Members	771	510
▶ Total Payroll/Benefit	\$45.2 M	\$15.1 M
▶ Average Salary/Benefit	\$58,600	\$29,600
▶ Average Age	49	75
▶ Average Service	13.1 years	NA

ASSET ALLOCATION (12/31/16)

EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	58
▶ Number Who Reported Earnings	20
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	9.06%
▶ 2016 Market Value	\$178.7M
▶ 2012-2016 (Annualized)	7.89%
▶ 1985-2016 (Annualized)	8.57%

Bristol County

County Crossing
645 County Street
Taunton, MA 02780
Phone 508-824-4029
Fax 508-880-8749

Board Members

Christopher T. Saunders, Esq. (Chairperson),
Christine N. DeFontes, William M. Downey,
Stephen J. Rivard, John T. Saunders

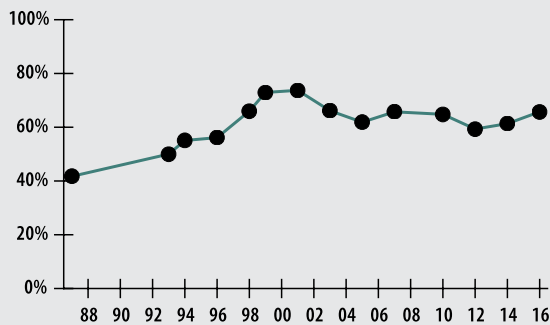
Board Administrator

Roxanne Donovan

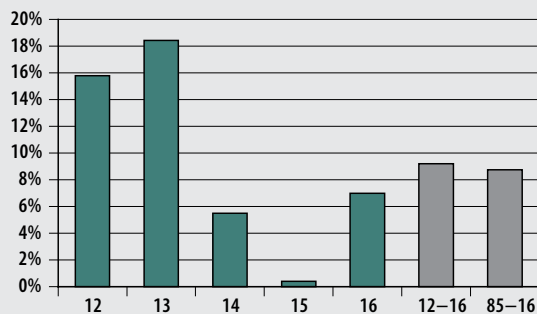
Board Meeting

Last Thursday of each month

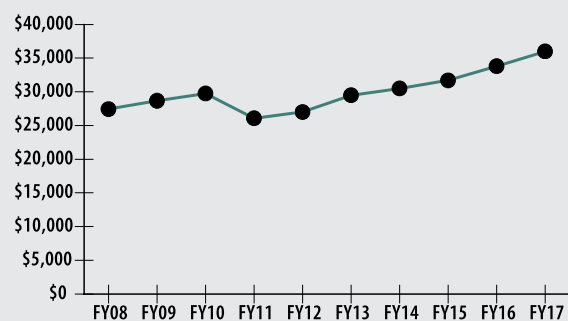
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.77%

31 years 2015

8.83%

30 years 2014

9.12%

10 years 2016

5.40%

10 years 2015

6.12%

10 years 2014

6.82%

5 years 2016

9.22%

5 years 2015

7.38%

5 years 2014

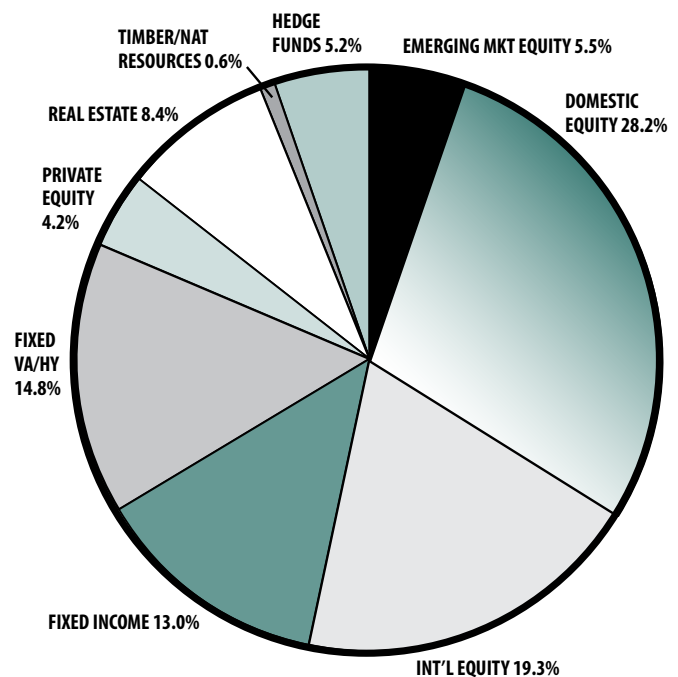
10.16%

ACTUARIAL

▶ Funded Ratio	65.7%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.5% Increasing
▶ Year Fully Funded	2028
▶ Unfunded Liability	\$311.5 M
▶ Total Pension Appropriation (Fiscal 2017)	\$36.0 M

	ACTIVE	RETIRED
▶ Number of Members	3,193	2,393
▶ Total Payroll/Benefit	\$152.4 M	\$54.0 M
▶ Average Salary/Benefit	\$47,700	\$22,600
▶ Average Age	NA	72
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	223
▶ Number Who Reported Earnings	67
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.01%
▶ 2016 Market Value	\$598.5M
▶ 2012-2016 (Annualized)	9.22%
▶ 1985-2016 (Annualized)	8.77%

Brockton

1322 Belmont Street
Suite 101
Brockton, MA 02301-1813
Phone 508-580-7847
Fax 508-559-0559

Board Members

William R. Farmer (Chairperson),
Mary Lynn P. Chu, Edward P. Mack,
Matthew J. McLaughlin, William E. Parlow

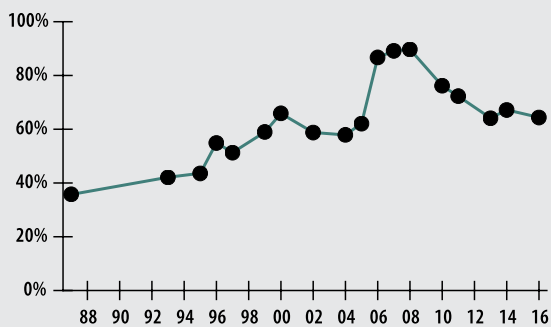
Board Administrator

Jeanne Martineau

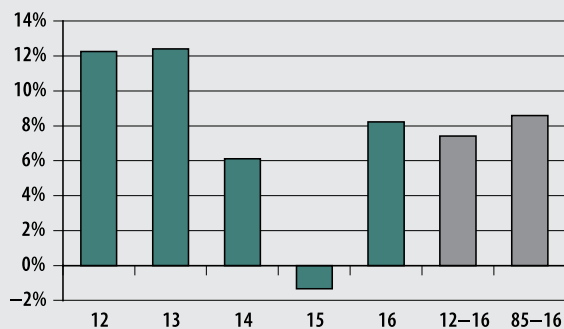
Board Meeting

Usually a day in last week of the month

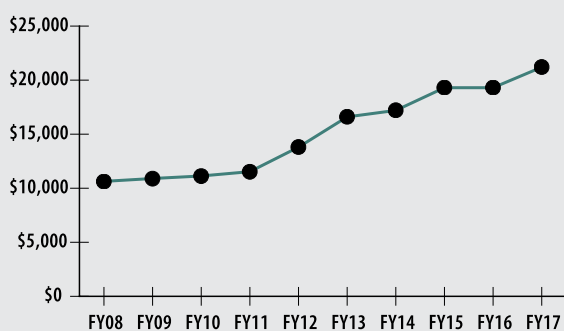
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.60%

31 years 2015
8.61%

30 years 2014
8.96%

10 years 2016
4.28%

10 years 2015
4.69%

10 years 2014
5.63%

5 years 2016
7.42%

5 years 2015
5.76%

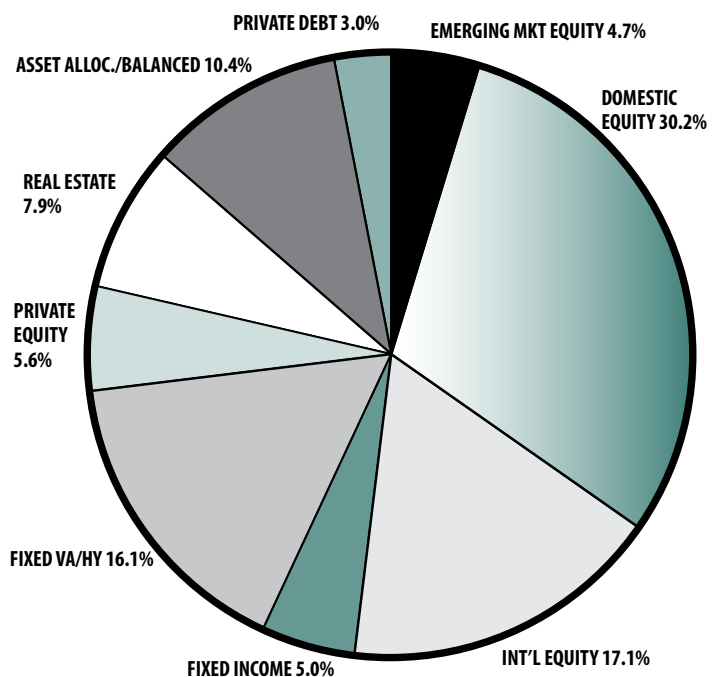
5 years 2014
8.75%

ACTUARIAL

▶ Funded Ratio	64.4%
▶ Date of Last Valuation	01/16
▶ Actuary	Buck Consultants
▶ Assumed Rate of Return	8.00%
▶ Funding Schedule	4.5% Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$210.6 M
▶ Total Pension Appropriation (Fiscal 2017)	\$21.2 M

	ACTIVE	RETIRED
▶ Number of Members	1,756	1,270
▶ Total Payroll/Benefit	\$89.7 M	\$38.8 M
▶ Average Salary/Benefit	\$51,100	\$30,600
▶ Average Age	47	NA
▶ Average Service	11.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	133
▶ Number Who Reported Earnings	35
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.23%
▶ 2016 Market Value	\$369.1M
▶ 2012-2016 (Annualized)	7.42%
▶ 1985-2016 (Annualized)	8.60%

Brookline

Public Health Building, Ground Floor
11 Pierce Street
Brookline, MA 02445
Phone 617-730-2028
Fax 617-730-2298

Board Members

James J. Riley (Chairperson),
Gary Altman, Michael F. DiPietro,
Jeana A. Franconi, Robert J. Ward

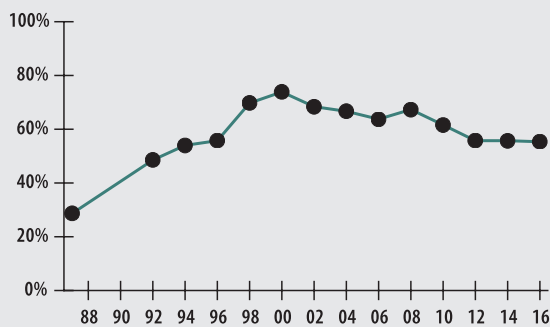
Board Administrator

Frank J. Zecha

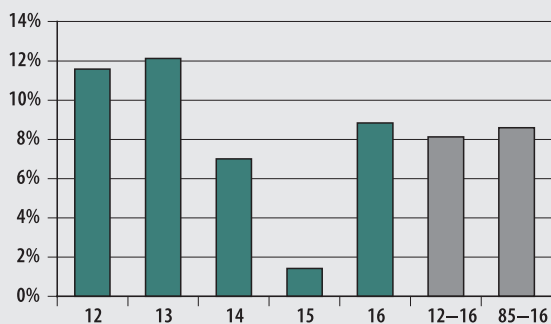
Board Meeting

Varies

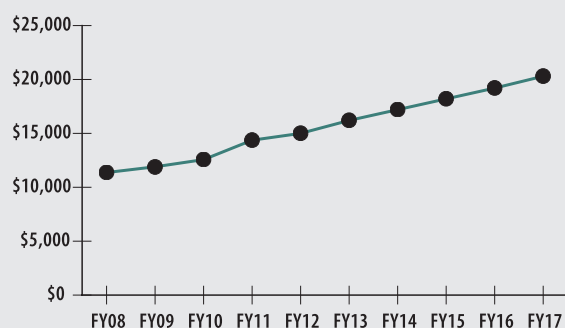
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.60%

31 years 2015

8.59%

30 years 2014

8.84%

10 years 2016

4.63%

10 years 2015

5.13%

10 years 2014

5.78%

5 years 2016

8.13%

5 years 2015

6.02%

5 years 2014

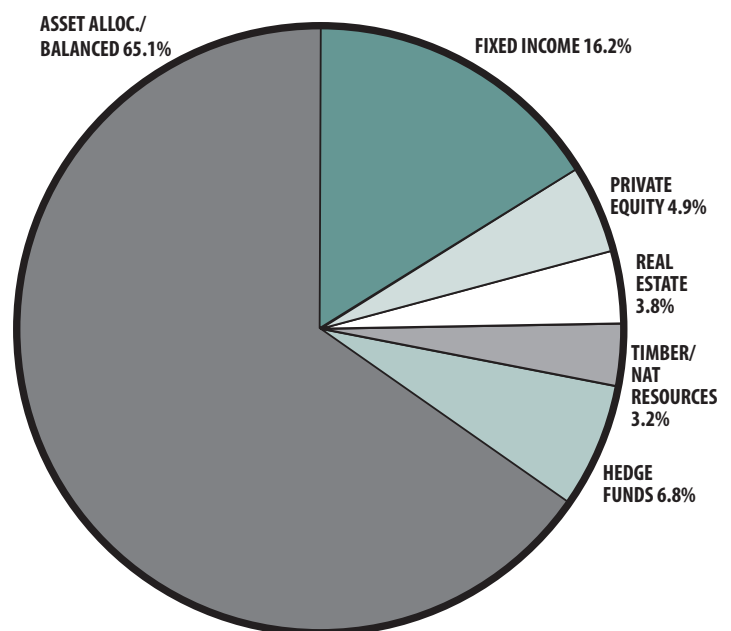
8.52%

ACTUARIAL

▶ Funded Ratio	55.4%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.40%
▶ Funding Schedule	7.85% Total Increasing
▶ Year Fully Funded	2030
▶ Unfunded Liability	\$216.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$20.3 M

	ACTIVE	RETIRED
▶ Number of Members	1,318	898
▶ Total Payroll/Benefit	\$70.4 M	\$27.7 M
▶ Average Salary/Benefit	\$53,400	\$30,800
▶ Average Age	43	NA
▶ Average Service	10.5 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	149
▶ Number Who Reported Earnings	35
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$20,197.56

▶ 2016 Return	8.83%
▶ 2016 Market Value	\$273.8M
▶ 2012-2016 (Annualized)	8.13%
▶ 1985-2016 (Annualized)	8.60%

Board Members

Francis E. Murphy III (Chairperson),
Nadia Chamblin-Foster, Michael P. Gardner,
James H. Monagle, John W. Shinkwin

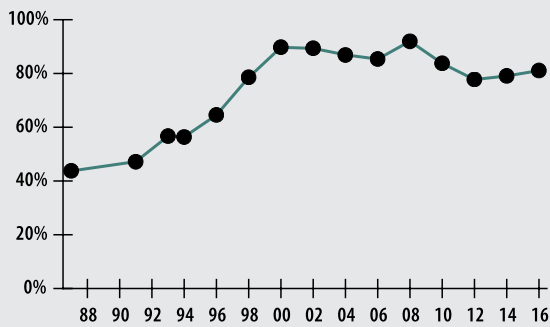
Board Administrator

Ellen K. Philbin

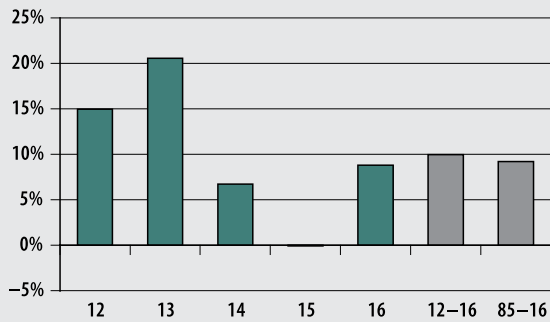
Board Meeting

First Monday of every month

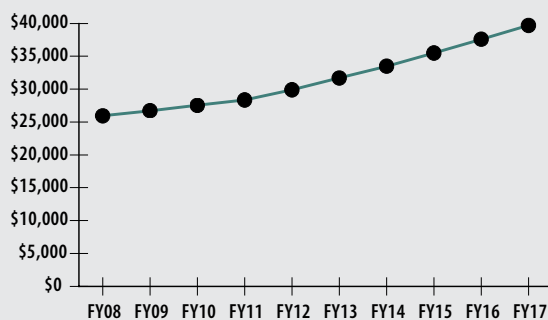
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.22%

31 years 2015

9.23%

30 years 2014

9.55%

10 years 2016

5.86%

10 years 2015

6.28%

10 years 2014

7.04%

5 years 2016

9.98%

5 years 2015

8.04%

5 years 2014

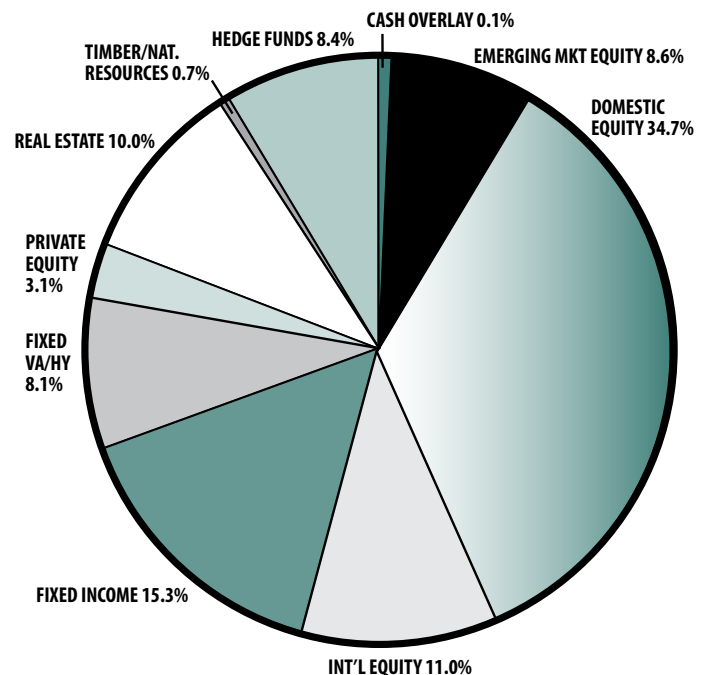
11.06%

ACTUARIAL

▶ Funded Ratio	81.1%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	5.85% Total Increasing
▶ Year Fully Funded	2026
▶ Unfunded Liability	\$252.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$39.7 M

	ACTIVE	RETIRED
▶ Number of Members	3,019	2,019
▶ Total Payroll/Benefit	\$221.0 M	\$67.0 M
▶ Average Salary/Benefit	\$73,200	\$33,200
▶ Average Age	48	NA
▶ Average Service	14.6 years	NA

ASSET ALLOCATION (12/31/16)

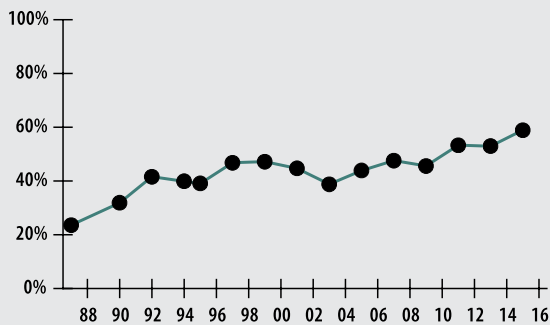


EARNED INCOME OF DISABILITY RETIREES (2015)

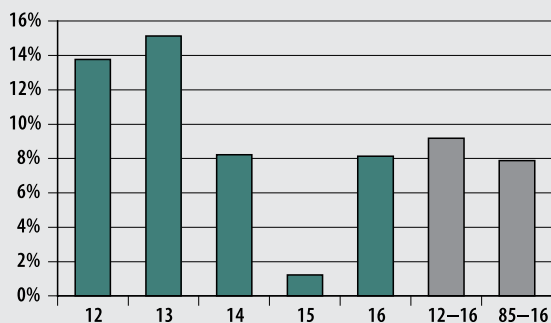
▶ Number of Disability Retirees	217
▶ Number Who Reported Earnings	47
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.80%
▶ 2016 Market Value	\$1.2B
▶ 2012-2016 (Annualized)	9.98%
▶ 1985-2016 (Annualized)	9.22%

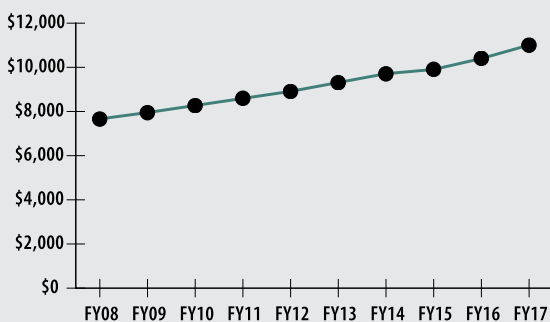
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

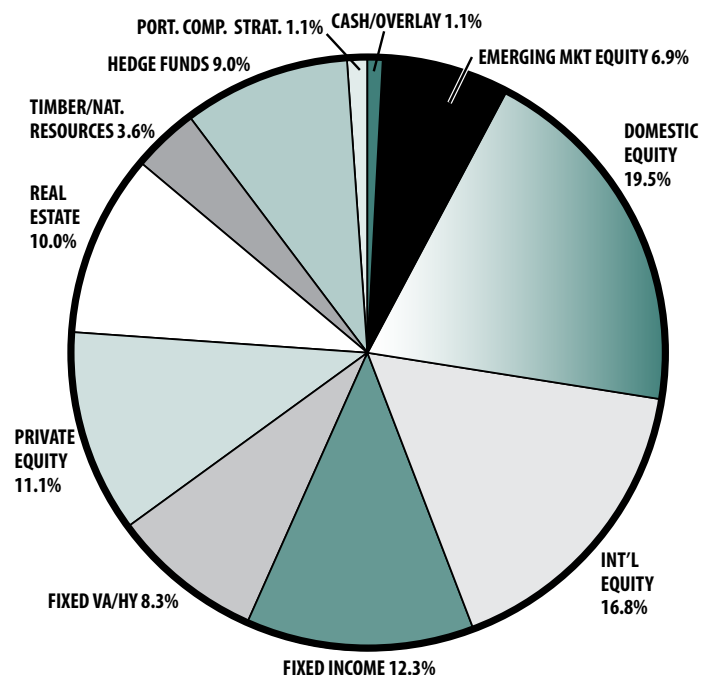
32 years 2016 7.88%	31 years 2015 7.87%	30 years 2014 8.10%
10 years 2016 5.13%	10 years 2015 5.95%	10 years 2014 6.90%
5 years 2016 9.18%	5 years 2015 7.53%	5 years 2014 10.01%

ACTUARIAL

▶ Funded Ratio	58.9%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.7% Total Increasing
▶ Year Fully Funded	2028
▶ Unfunded Liability	\$82.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$11.0 M

	ACTIVE	RETIRED
▶ Number of Members	663	382
▶ Total Payroll/Benefit	\$33.0 M	\$9.4 M
▶ Average Salary/Benefit	\$49,800	\$24,700
▶ Average Age	47	75
▶ Average Service	12.9 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	56
▶ Number Who Reported Earnings	16
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.13%
▶ 2016 Market Value	\$139.0M
▶ 2012-2016 (Annualized)	9.18%
▶ 1985-2016 (Annualized)	7.88%

Chicopee

City Hall, Market Square
274 Front Street
Chicopee, MA 01013-2685
Phone 413-594-1542
Fax 413-594-1544

Board Members

Timothy O. O'Shea, (Chairperson),
Debra A. Boronski, David Ference,
Paul Mailhott, Sharyn A. Riley

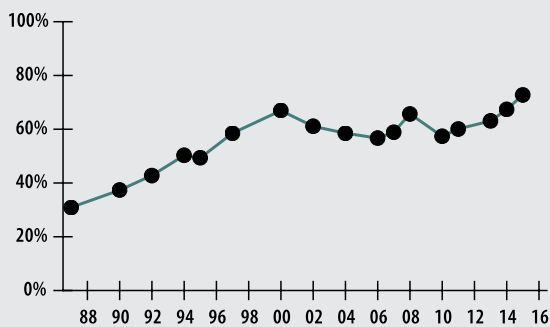
Board Administrator

Anna Maria Hamblin

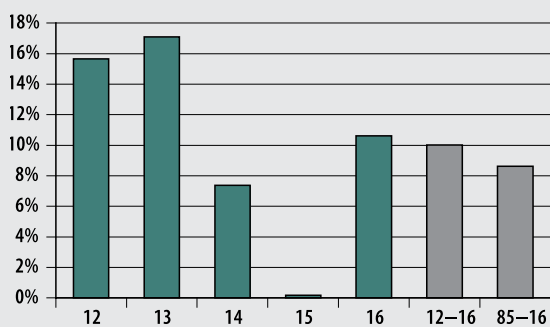
Board Meeting

Second Thursday of each month at 2:00 pm

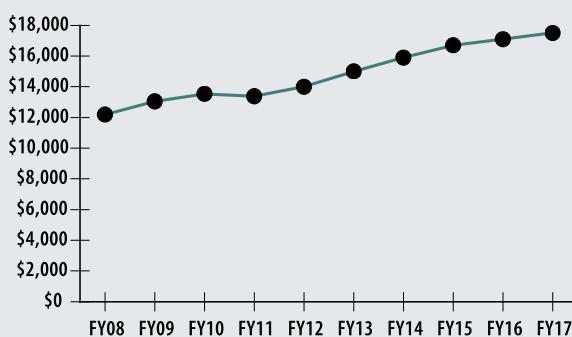
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.63%

31 years 2015

8.56%

30 years 2014

8.86%

10 years 2016

6.37%

10 years 2015

6.44%

10 years 2014

7.21%

5 years 2016

10.02%

5 years 2015

8.03%

5 years 2014

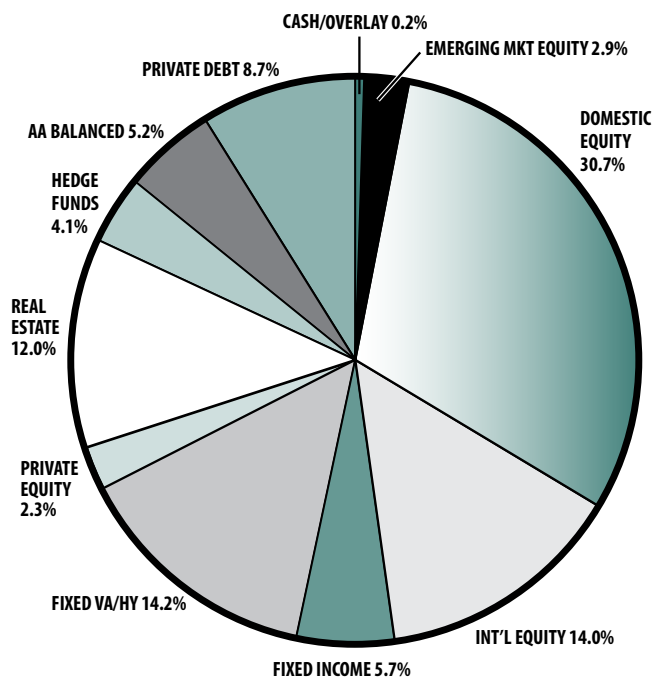
11.48%

ACTUARIAL

▶ Funded Ratio	72.8%
▶ Date of Last Valuation	01/15
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	8.00%
▶ Funding Schedule	2.5% Total Increasing
▶ Year Fully Funded	2023
▶ Unfunded Liability	\$90.2 M
▶ Total Pension Appropriation (Fiscal 2017)	\$17.5 M

	ACTIVE	RETIRED
▶ Number of Members	1,210	791
▶ Total Payroll/Benefit	\$51.0 M	\$17.4 M
▶ Average Salary/Benefit	\$42,200	\$22,000
▶ Average Age	48	73
▶ Average Service	13.8 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	85
▶ Number Who Reported Earnings	27
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$8,738.93

▶ 2016 Return	10.63%
▶ 2016 Market Value	\$279.4M
▶ 2012-2016 (Annualized)	10.02%
▶ 1985-2016 (Annualized)	8.63%

Clinton

242 Church Street
Clinton, MA 01510
Phone 978-365-4118
Fax 978-612-0215

Board Members

Paul B. Cherubini (Chairperson),
Joseph P. Casasanto, Diane L. Magliozzi,
John M. McNamara

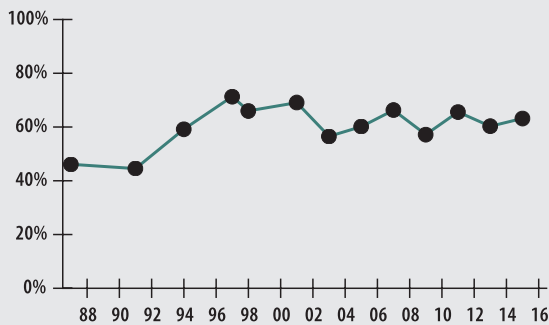
Board Administrator

Patricia Hazel

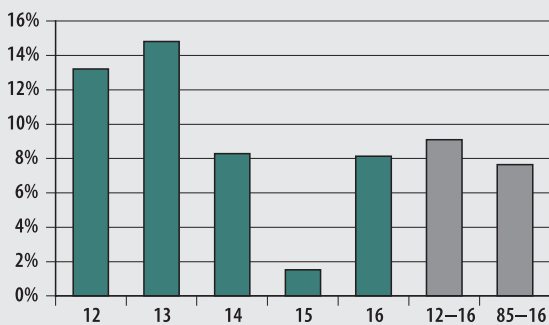
Board Meeting

Generally the last Tuesday of each
month at 4:00 pm

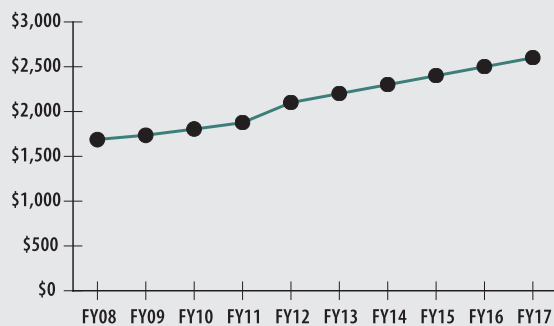
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
7.64%

31 years 2015
7.62%

30 years 2014
7.83%

10 years 2016
4.09%

10 years 2015
5.01%

10 years 2014
5.79%

5 years 2016
9.09%

5 years 2015
7.39%

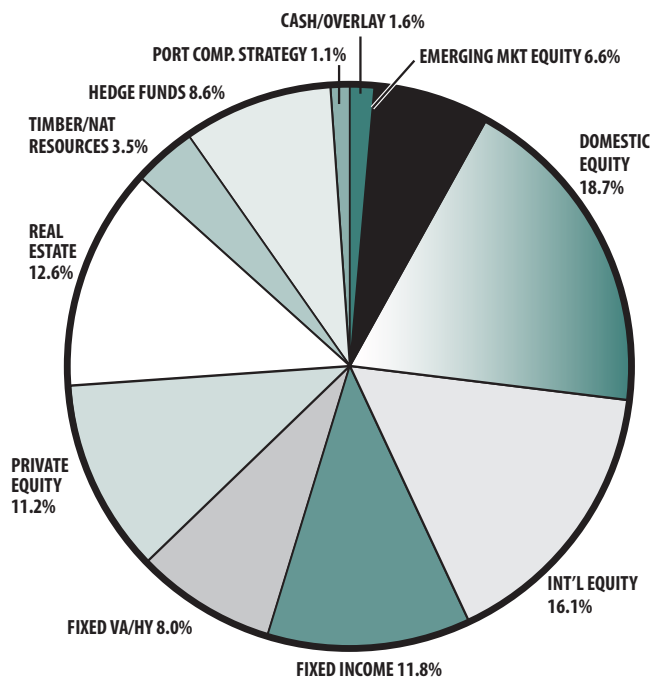
5 years 2014
9.75%

ACTUARIAL

▶ Funded Ratio	63.2%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.60%
▶ Funding Schedule	5.0% Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$22.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$2.6 M

	ACTIVE	RETIRED
▶ Number of Members	249	119
▶ Total Payroll/Benefit	\$10.2 M	\$2.8M
▶ Average Salary/Benefit	\$40,800	\$23,900
▶ Average Age	48	73
▶ Average Service	11.7 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	11
▶ Number Who Reported Earnings	4
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.13%
▶ 2016 Market Value	\$43.0M
▶ 2012-2016 (Annualized)	9.09%
▶ 1985-2016 (Annualized)	7.64%

Concord

P. O. Box 535
22 Monument Square
Concord, MA 01742-0535
Phone 978-318-3068
Fax 978-318-3093

Board Members

Peter J. Fulton (Chairperson),
Mary M. Barrett, Kerry LaFleur,
Arnold Roth, Brian J. Whitney

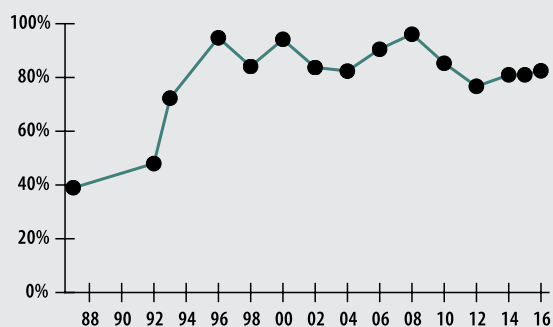
Board Administrator

Linda Boucher

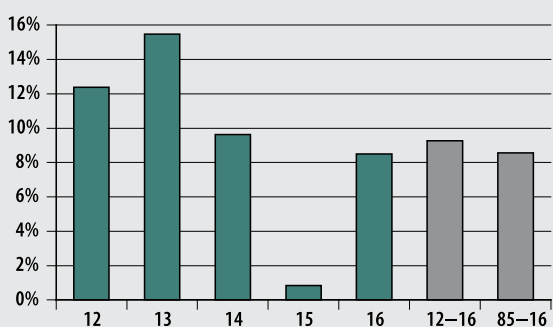
Board Meeting

Varies, usually the last Tuesday
of each month

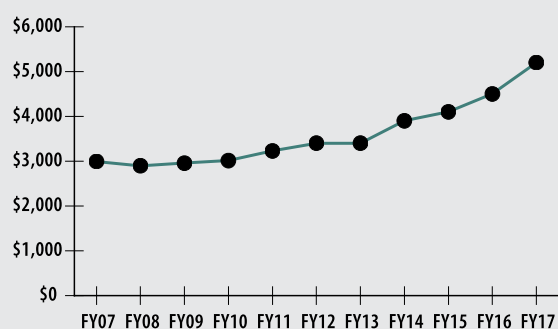
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.56%

31 years 2015

8.57%

30 years 2014

8.83%

10 years 2016

5.74%

10 years 2015

6.23%

10 years 2014

7.00%

5 years 2016

9.26%

5 years 2015

8.17%

5 years 2014

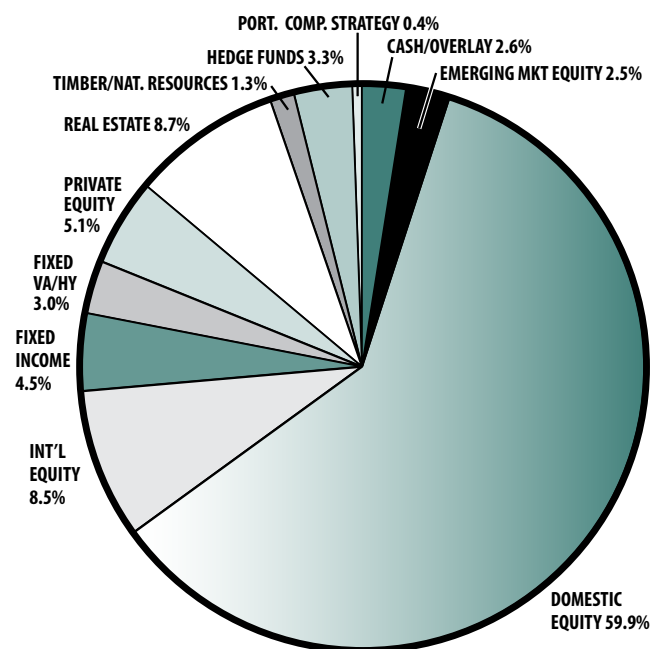
10.52%

ACTUARIAL

▶ Funded Ratio	82.5%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.00%
▶ Funding Schedule	2.0% Increasing
▶ Year Fully Funded	2030
▶ Unfunded Liability	\$29.2 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.2 M

	ACTIVE	RETIRED
▶ Number of Members	519	279
▶ Total Payroll/Benefit	\$29.9 M	\$6.9 M
▶ Average Salary/Benefit	\$57,700	\$24,600
▶ Average Age	49	73
▶ Average Service	12.0 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	20
▶ Number Who Reported Earnings	6
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.51%
▶ 2016 Market Value	\$145.3M
▶ 2012-2016 (Annualized)	9.26%
▶ 1985-2016 (Annualized)	8.56%

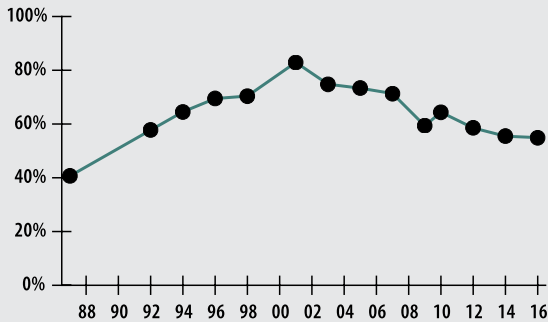
Danvers

Town Hall
1 Sylvan Street
Danvers, MA 01923
Phone 978-777-0001, Ext. 3044
Fax 978-762-0264

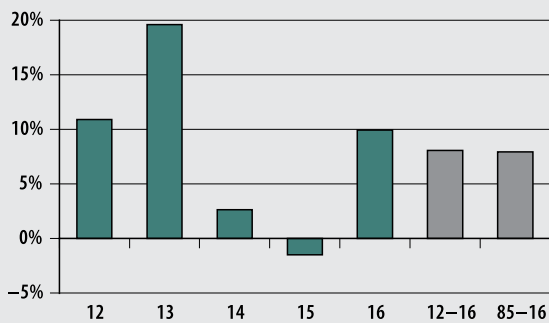
Board Members
Wayne P. Marquis (Chairperson),
Joseph Collins, Corinna L. Grace,
Dana M. Hagan, Stephen Swanson

Board Administrator
Travis Ahern
Board Meeting
Last Wednesday of each month at 3:00 pm

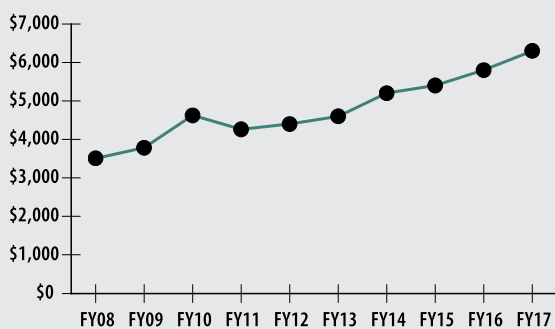
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

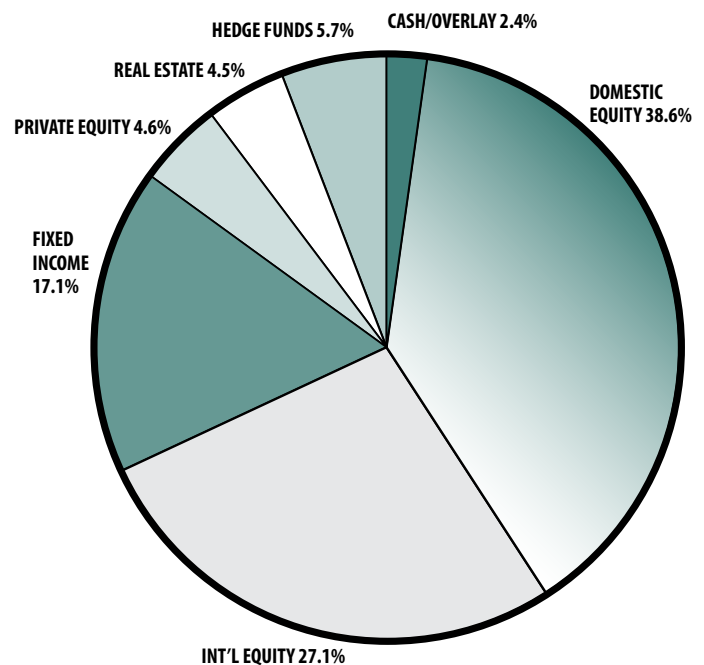
32 years 2016 7.95%	31 years 2015 7.89%	30 years 2014 8.22%
10 years 2016 4.79%	10 years 2015 4.97%	10 years 2014 5.98%
5 years 2016 8.09%	5 years 2015 5.29%	5 years 2014 8.70%

ACTUARIAL

▶ Funded Ratio	54.9%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$79.2 M
▶ Total Pension Appropriation (Fiscal 2016)	\$6.3 M

	ACTIVE	RETIRED
▶ Number of Members	467	411
▶ Total Payroll/Benefit	\$25.7 M	\$10.9 M
▶ Average Salary/Benefit	\$54,900	\$26,400
▶ Average Age	48	74
▶ Average Service	12.2 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	26
▶ Number Who Reported Earnings	6
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	9.95%
▶ 2016 Market Value	\$102.1M
▶ 2012-2016 (Annualized)	8.09%
▶ 1985-2016 (Annualized)	7.95%

Dedham

202 Bussey Street
Suite 101
Dedham, MA 02026
Phone 781-326-7693
Fax 781-329-4123

Board Members

Thomas R. Rorrie (Chairperson),
John W. Fontaine, Jr.,
Stephen M. MacDougall, John Maloney,
Kevin McCarthy

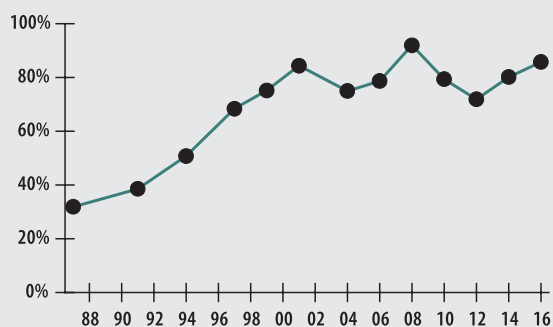
Board Administrator

Barbara Isberg

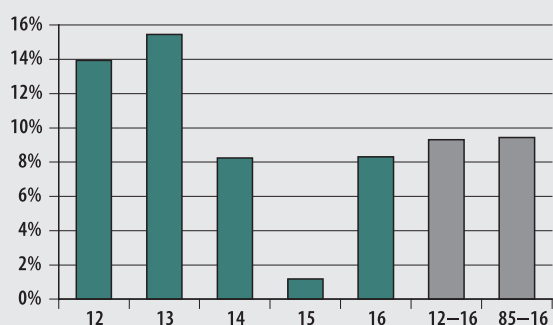
Board Meeting

Third Wednesday of each month

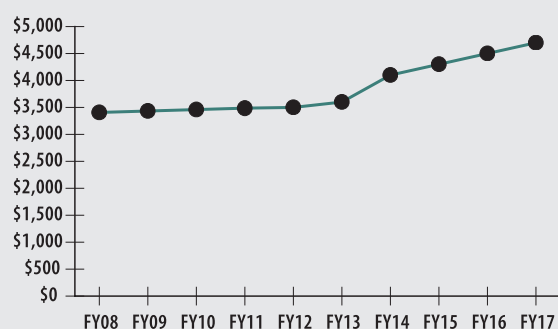
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
9.44%

31 years 2015
9.47%

30 years 2014
9.76%

10 years 2016
5.19%

10 years 2015
5.99%

10 years 2014
7.14%

5 years 2016
9.31%

5 years 2015
7.62%

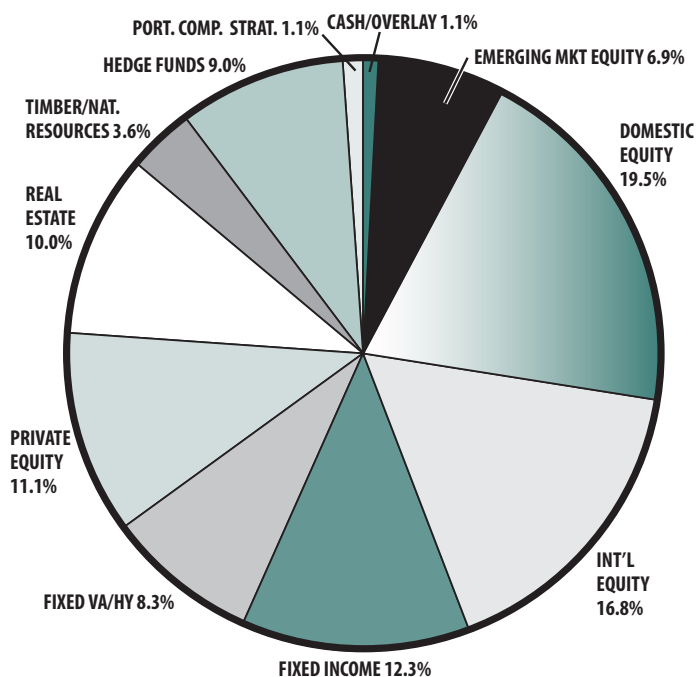
5 years 2014
10.17%

ACTUARIAL

▶ Funded Ratio	85.8%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.5% Increasing
▶ Year Fully Funded	2022
▶ Unfunded Liability	\$18.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$4.7 M

	ACTIVE	RETIRED
▶ Number of Members	440	331
▶ Total Payroll/Benefit	\$22.5 M	\$8.9 M
▶ Average Salary/Benefit	\$51,000	\$26,900
▶ Average Age	NA	75
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)

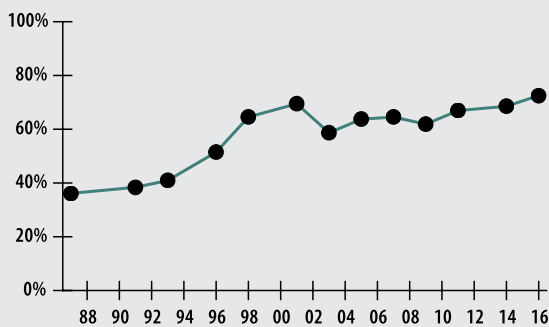


EARNED INCOME OF DISABILITY RETIREES (2015)

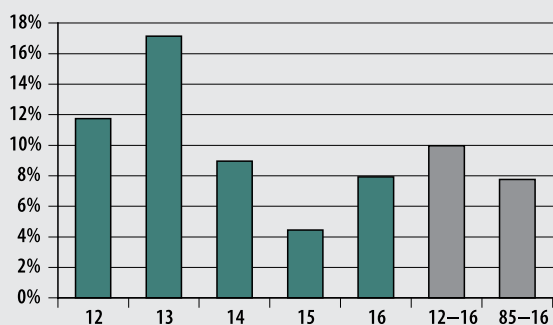
▶ Number of Disability Retirees	46
▶ Number Who Reported Earnings	8
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.30%
▶ 2016 Market Value	\$123.0M
▶ 2012-2016 (Annualized)	9.31%
▶ 1985-2016 (Annualized)	9.44%

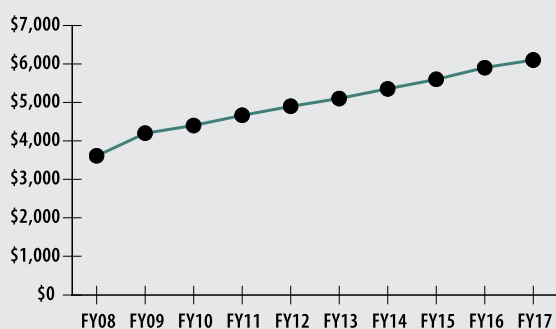
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

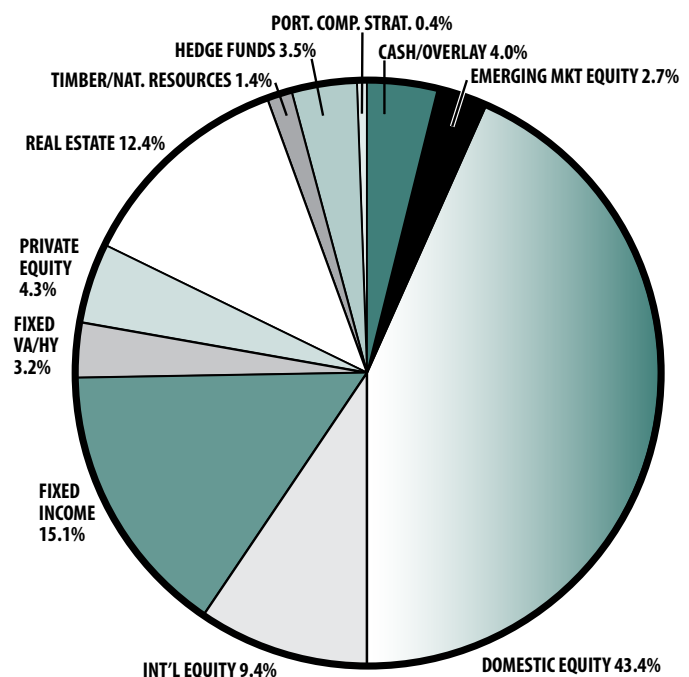
32 years 2016 7.77%	31 years 2015 7.76%	30 years 2014 7.87%
10 years 2016 6.38%	10 years 2015 7.02%	10 years 2014 7.32%
5 years 2016 9.97%	5 years 2015 8.91%	5 years 2014 10.87%

ACTUARIAL

▶ Funded Ratio	72.5%
▶ Date of Last Valuation	01/16
▶ Actuary	KMS Actuaries
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2030
▶ Unfunded Liability	\$46.0 M
▶ Total Pension Appropriation (Fiscal 2017)	\$6.1 M

	ACTIVE	RETIRED
▶ Number of Members	672	292
▶ Total Payroll/Benefit	\$38.0 M	\$6.9 M
▶ Average Salary/Benefit	\$56,500	\$23,600
▶ Average Age	49	70
▶ Average Service	10.8 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	25
▶ Number Who Reported Earnings	13
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.94%
▶ 2016 Market Value	\$131.9M
▶ 2012-2016 (Annualized)	9.97%
▶ 1985-2016 (Annualized)	7.77%

Board Members

James P. Dunham (Chairperson),
Valerie J. Bernier, Donald C. Emerson,
Nicolette Growhoski, Cornelius E. Sullivan

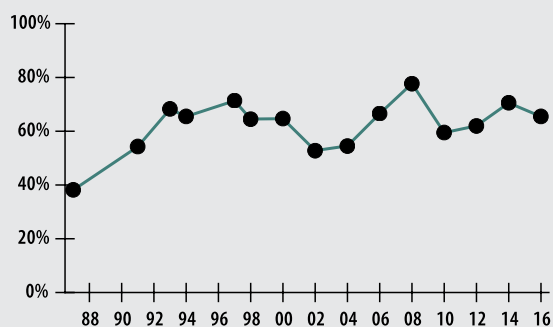
Board Administrator

Kymme Wood

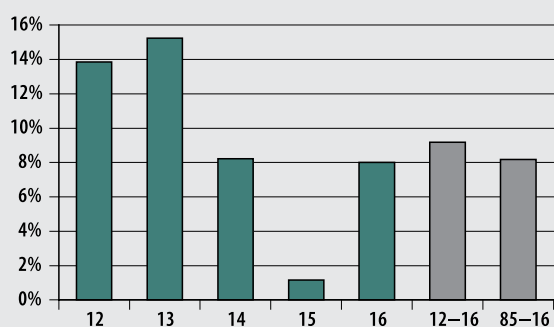
Board Meeting

Fourth Tuesday of each month

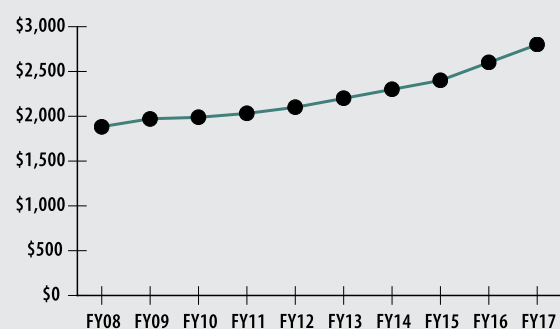
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.19%

31 years 2015
8.19%

30 years 2014
8.43%

10 years 2016
5.09%

10 years 2015
5.92%

10 years 2014
7.06%

5 years 2016
9.19%

5 years 2015
7.56%

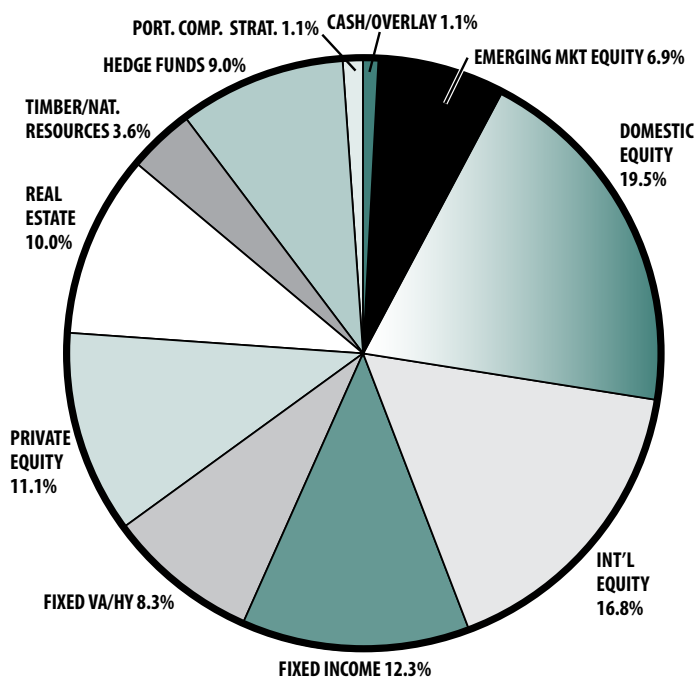
5 years 2014
10.06%

ACTUARIAL

▶ Funded Ratio	65.5%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.0% Total Increasing
▶ Year Fully Funded	2033
▶ Unfunded Liability	\$22.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$2.8 M

	ACTIVE	RETIRED
▶ Number of Members	216	161
▶ Total Payroll/Benefit	\$9.6 M	\$3.4 M
▶ Average Salary/Benefit	\$44,400	\$21,200
▶ Average Age	48	71
▶ Average Service	13.1 years	NA

ASSET ALLOCATION (12/31/16)

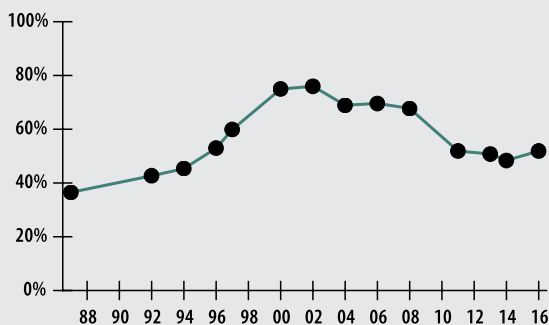


EARNED INCOME OF DISABILITY RETIREES (2015)

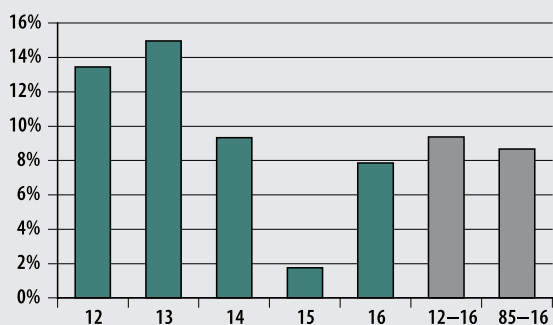
▶ Number of Disability Retirees	20
▶ Number Who Reported Earnings	7
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.02%
▶ 2016 Market Value	\$46.5M
▶ 2012-2016 (Annualized)	9.19%
▶ 1985-2016 (Annualized)	8.19%

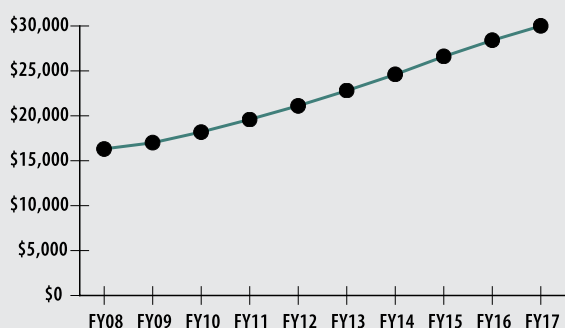
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.67%

31 years 2015
8.70%

30 years 2014
8.94%

10 years 2016
5.00%

10 years 2015
5.75%

10 years 2014
6.24%

5 years 2016
9.37%

5 years 2015
7.84%

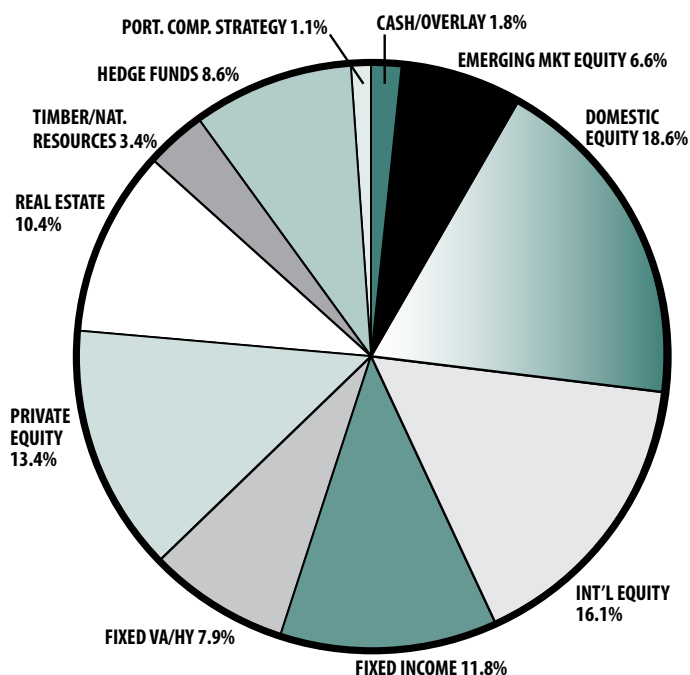
5 years 2014
10.55%

ACTUARIAL

▶ Funded Ratio	51.9%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$358.8 M
▶ Total Pension Appropriation (Fiscal 2017)	\$30.0 M

	ACTIVE	RETIRED
▶ Number of Members	2,738	1,768
▶ Total Payroll/Benefit	\$126.9 M	\$39.2 M
▶ Average Salary/Benefit	\$46,400	\$22,200
▶ Average Age	49	73
▶ Average Service	11.0 years	NA

ASSET ALLOCATION (12/31/16)

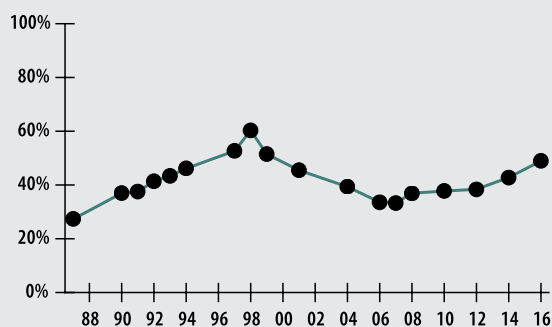


EARNED INCOME OF DISABILITY RETIREES (2015)

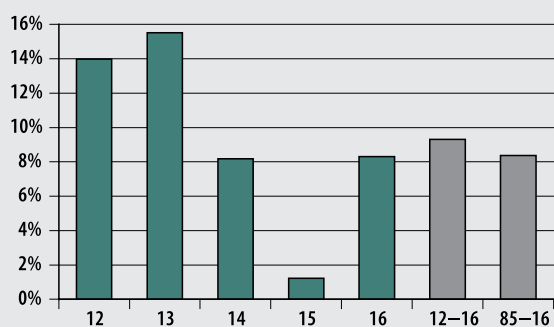
▶ Number of Disability Retirees	112
▶ Number Who Reported Earnings	35
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$70.96

▶ 2016 Return	7.86%
▶ 2016 Market Value	\$399.4M
▶ 2012-2016 (Annualized)	9.37%
▶ 1985-2016 (Annualized)	8.67%

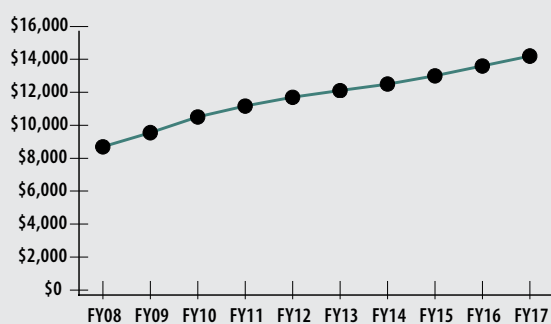
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

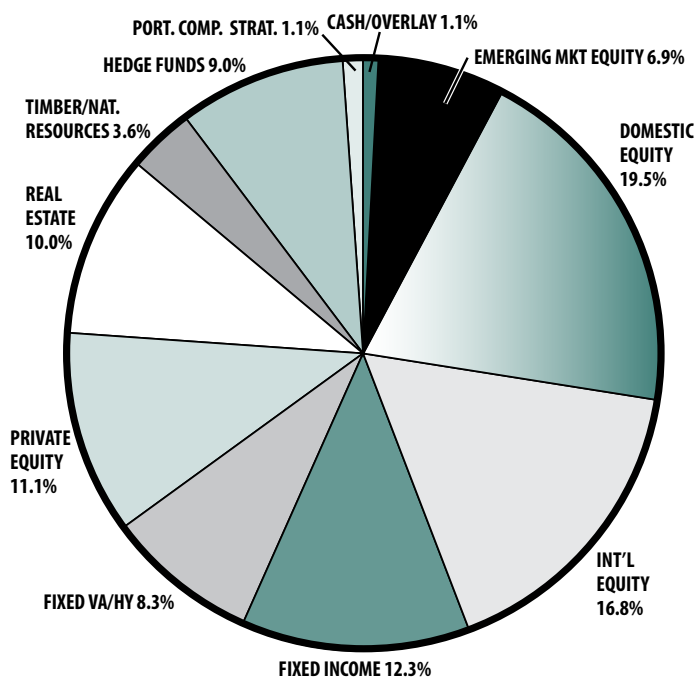
32 years 2016 8.37%	31 years 2015 8.37%	30 years 2014 8.62%
10 years 2016 5.18%	10 years 2015 5.96%	10 years 2014 6.86%
5 years 2016 9.32%	5 years 2015 7.63%	5 years 2014 10.24%

ACTUARIAL

▶ Funded Ratio	49.0%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.63%
▶ Funding Schedule	5.01% Total Increasing
▶ Year Fully Funded	2029
▶ Unfunded Liability	\$117.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$14.2 M

	ACTIVE	RETIRED
▶ Number of Members	737	527
▶ Total Payroll/Benefit	\$40.0 M	\$12.6 M
▶ Average Salary/Benefit	\$54,200	\$23,800
▶ Average Age	46	76
▶ Average Service	10.7 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	79
▶ Number Who Reported Earnings	17
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.30%
▶ 2016 Market Value	\$123.7M
▶ 2012-2016 (Annualized)	9.32%
▶ 1985-2016 (Annualized)	8.37%

Fairhaven

Town Hall
40 Centre Street
Fairhaven, MA 02719
Phone 508-979-4023, Ext. 121
Fax 508-993-9486

Board Members

Earl M. Faunce (Chairperson),
Anne M. Carreiro, Mark Rees,
Alfred H. Robichaud, Joyce Shepard

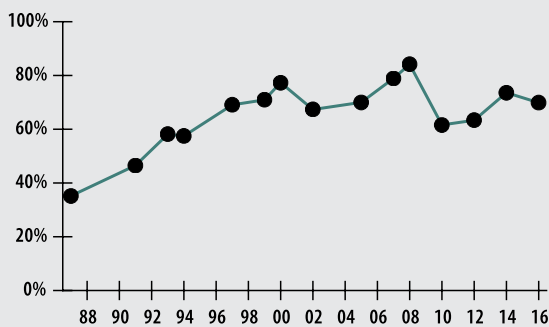
Board Administrator

Mary Sturgeon

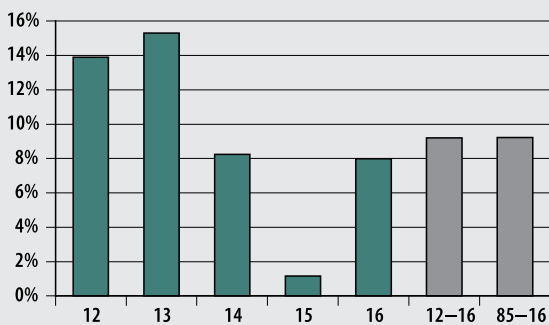
Board Meeting

Varies

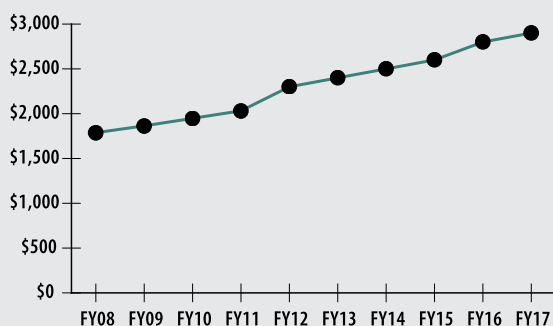
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.22%

31 years 2015

9.26%

30 years 2014

9.54%

10 years 2016

5.08%

10 years 2015

5.90%

10 years 2014

7.05%

5 years 2016

9.20%

5 years 2015

7.59%

5 years 2014

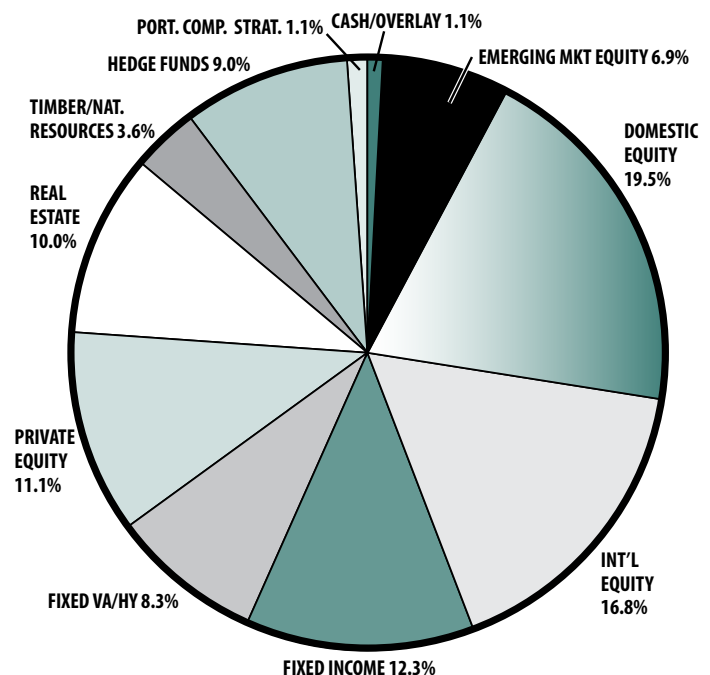
10.07%

ACTUARIAL

▶ Funded Ratio	69.8%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.0% Total Increasing
▶ Year Fully Funded	2031
▶ Unfunded Liability	\$22.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$2.9 M

	ACTIVE	RETIRED
▶ Number of Members	255	181
▶ Total Payroll/Benefit	\$11.1 M	\$3.8 M
▶ Average Salary/Benefit	\$43,600	\$20,900
▶ Average Age	48	73
▶ Average Service	13.1 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	20
▶ Number Who Reported Earnings	11
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.99%
▶ 2016 Market Value	\$54.2M
▶ 2012-2016 (Annualized)	9.20%
▶ 1985-2016 (Annualized)	9.22%

Fall River

30 Third Street
Suite 301
Fall River, MA 02720
Phone 508-646-9120
Fax 508-646-9123

Board Members

Arthur Viana (Chairperson),
Robert Camara, Krishan Gupta,
David Machado, Mark Nassiff, Jr.

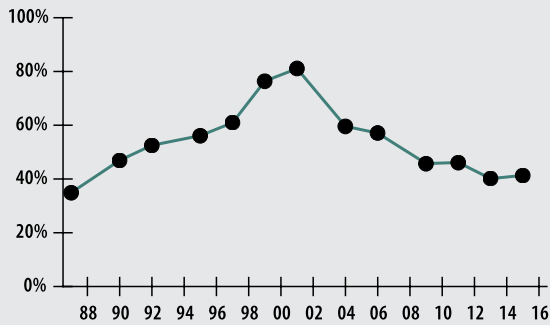
Board Administrator

Christine Tetreault

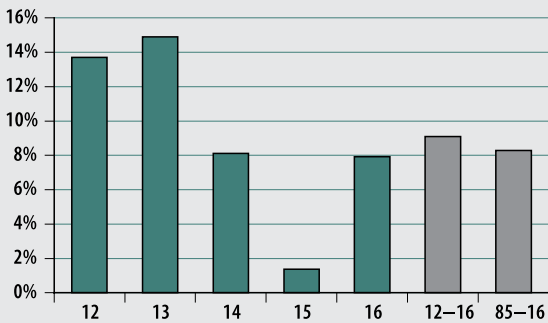
Board Meeting

Varies

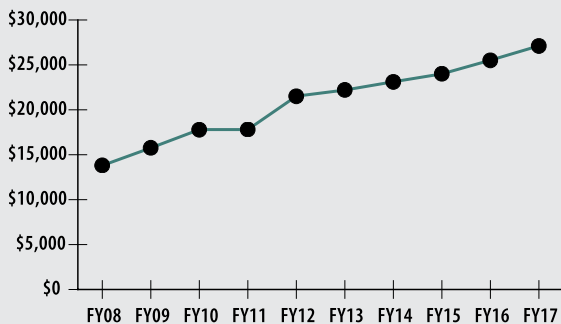
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

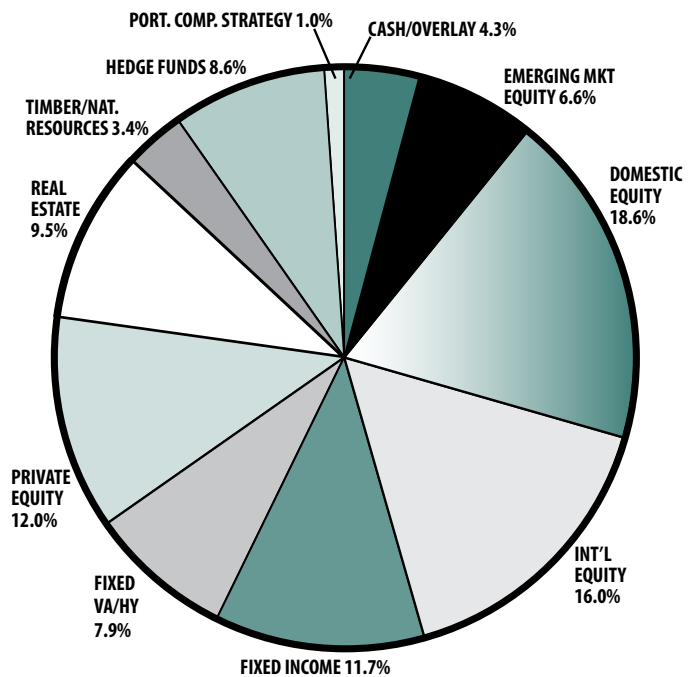
32 years 2016 8.29%	31 years 2015 8.30%	30 years 2014 8.54%
10 years 2016 4.80%	10 years 2015 5.26%	10 years 2014 5.84%
5 years 2016 9.10%	5 years 2015 7.56%	5 years 2014 9.99%

ACTUARIAL

▶ Funded Ratio	41.3%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	6.3% Total Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$336.8 M
▶ Total Pension Appropriation (Fiscal 2017)	\$27.1 M

	ACTIVE	RETIRED
▶ Number of Members	1,586	1,570
▶ Total Payroll/Benefit	\$73.8 M	\$35.7 M
▶ Average Salary/Benefit	\$46,500	\$22,700
▶ Average Age	46	73
▶ Average Service	13.1 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	207
▶ Number Who Reported Earnings	63
▶ Number of Excess Earners	4
▶ Total Amount of Refund Due	\$24,253.29

▶ 2016 Return	7.92%
▶ 2016 Market Value	\$249.4M
▶ 2012-2016 (Annualized)	9.10%
▶ 1985-2016 (Annualized)	8.29%

Falmouth

80 Davis Straits, Suite 102
Falmouth, MA 02540
Phone 508-457-0578
Fax 508-540-9962

Board Members

Russell R. Ferreira (Chairperson),
Gary W. Anderson, Craig O'Malley,
Jennifer P. Petit, Ellen K. Philbin

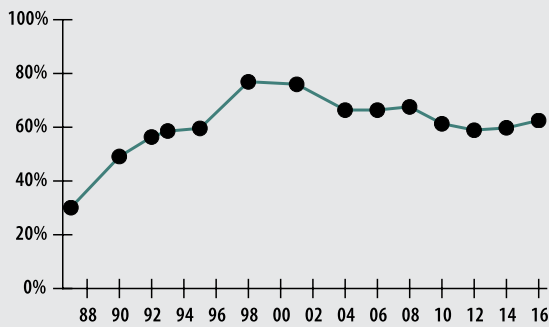
Board Administrator

Francis X. St. Germaine III

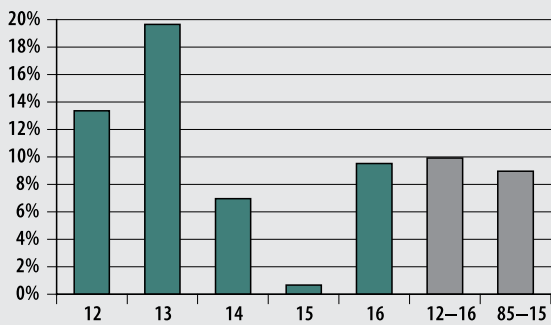
Board Meeting

Varies

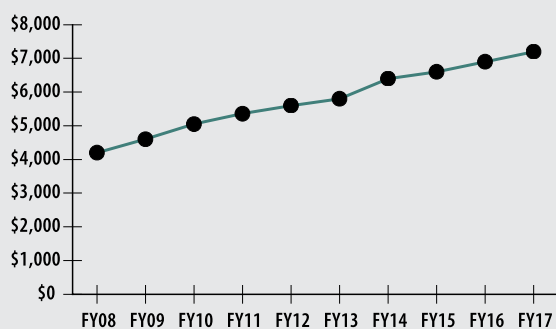
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.97%

31 years 2015

8.94%

30 years 2014

9.23%

10 years 2016

5.51%

10 years 2015

5.90%

10 years 2014

6.61%

5 years 2016

9.93%

5 years 2015

8.15%

5 years 2014

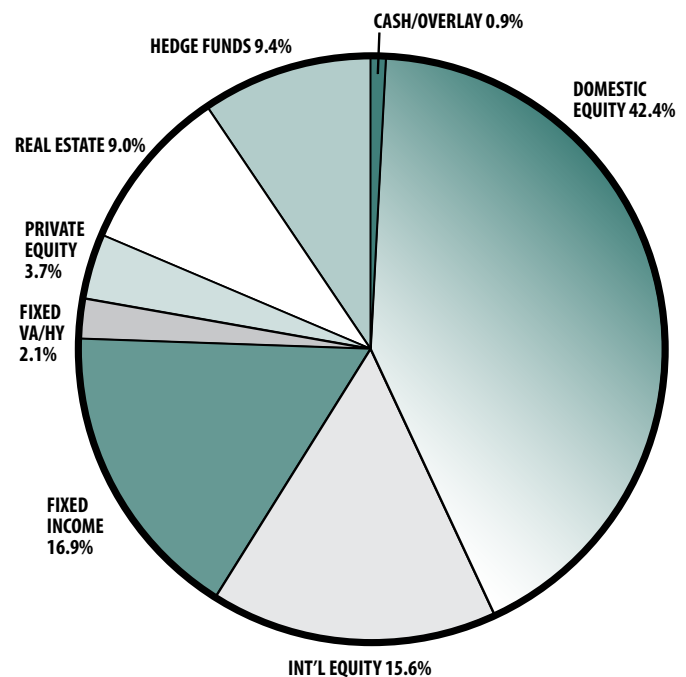
10.92%

ACTUARIAL

▶ Funded Ratio	62.5%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.86% Total Increasing
▶ Year Fully Funded	2033
▶ Unfunded Liability	\$71.5 M
▶ Total Pension Appropriation (Fiscal 2017)	\$7.2 M

	ACTIVE	RETIRED
▶ Number of Members	571	379
▶ Total Payroll/Benefit	\$28.4 M	\$10.2 M
▶ Average Salary/Benefit	\$49,800	\$27,000
▶ Average Age	49	72
▶ Average Service	12.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	37
▶ Number Who Reported Earnings	18
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	9.84%
▶ 2016 Market Value	\$123.6M
▶ 2012-2016 (Annualized)	9.93%
▶ 1985-2016 (Annualized)	8.97%

Board Members

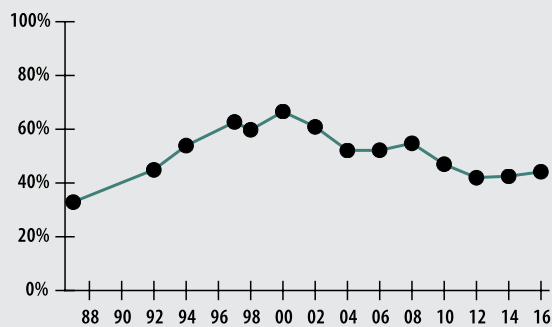
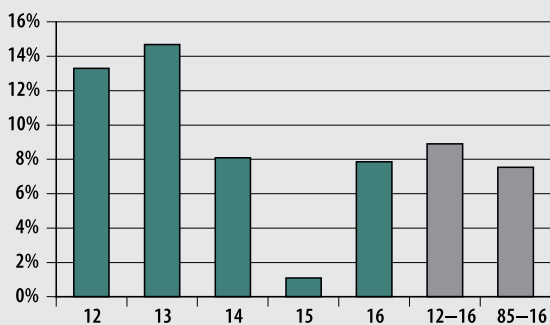
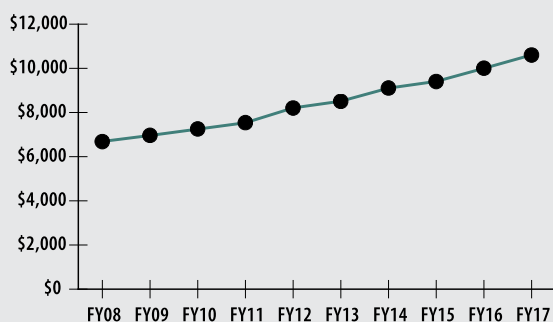
Norman J. LeBlanc (Chairperson),
Calvin Brooks, John C. Curran,
Thomas A. Dateo, Jr., Ellen M. Jerszyk

Board Administrator

Tina Schneider

Board Meeting

Fourth Tuesday of each month at 10:00 am

FUNDED RATIO (1987-2016)

INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)

10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)

INVESTMENT RETURN HISTORY
32 years 2016

7.55%

31 years 2015

7.54%

30 years 2014

7.76%

10 years 2016

4.68%

10 years 2015

5.11%

10 years 2014

5.65%

5 years 2016

8.90%

5 years 2015

7.33%

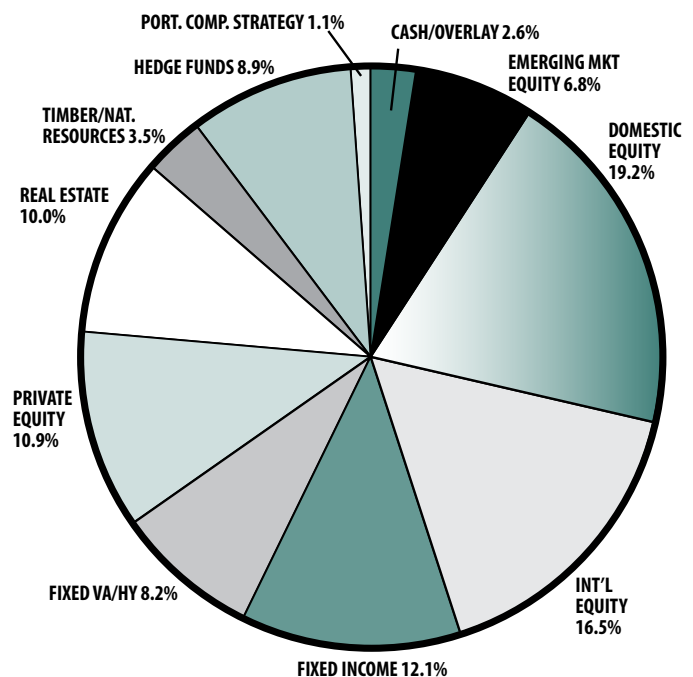
5 years 2014

9.53%

ACTUARIAL

▶ Funded Ratio	44.2%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$131.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$10.6 M

	ACTIVE	RETIRED
▶ Number of Members	648	568
▶ Total Payroll/Benefit	\$30.7 M	\$14.3 M
▶ Average Salary/Benefit	\$47,300	\$25,100
▶ Average Age	47	73
▶ Average Service	12.0 years	NA

ASSET ALLOCATION (12/31/16)

EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	47
▶ Number Who Reported Earnings	7
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.86%
▶ 2016 Market Value	\$104.7M
▶ 2012-2016 (Annualized)	8.90%
▶ 1985-2016 (Annualized)	7.55%

Framingham

Memorial Building
150 Concord Street, Room B-31
Framingham, MA 01702-8325
Phone 508-532-5465
Fax 508-532-5757

Board Members

Richard C. Howarth, Jr. (Chairperson),
Joseph Fonseca, Mary Ellen Kelley,
Peter J. Rovinelli, John W. White, Jr.

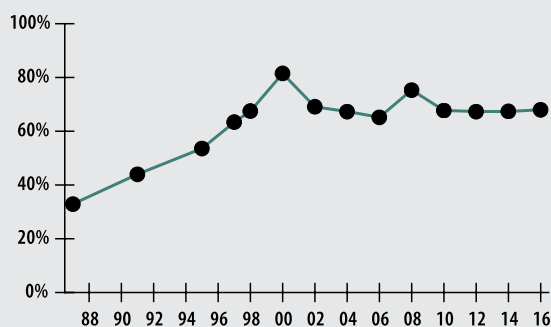
Board Administrator

Laurie A. Lizak

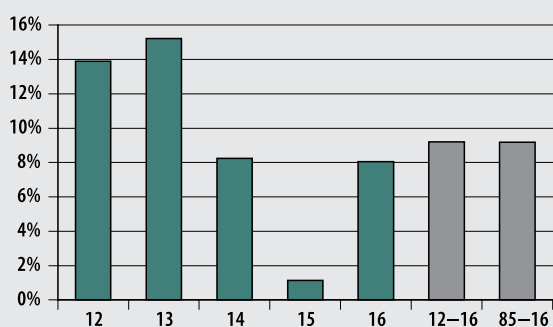
Board Meeting

Varies

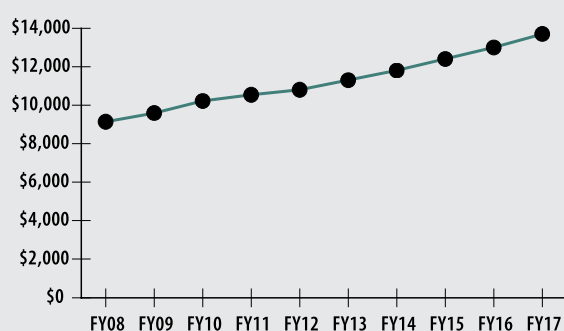
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
9.19%

31 years 2015
9.23%

30 years 2014
9.51%

10 years 2016
5.10%

10 years 2015
5.92%

10 years 2014
7.08%

5 years 2016
9.20%

5 years 2015
7.56%

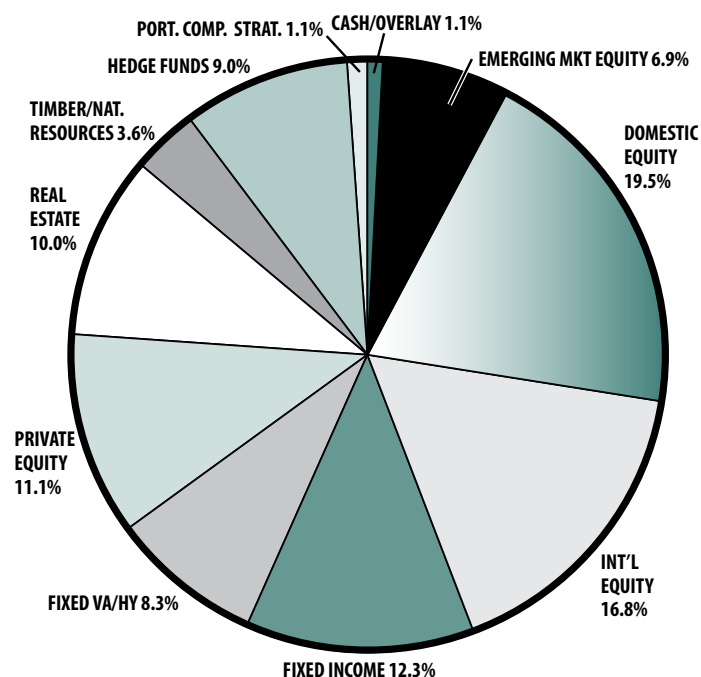
5 years 2014
10.07%

ACTUARIAL

▶ Funded Ratio	68.0%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.85% Total Increasing
▶ Year Fully Funded	2030
▶ Unfunded Liability	\$123.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$13.7 M

	ACTIVE	RETIRED
▶ Number of Members	1,191	808
▶ Total Payroll/Benefit	\$64.1 M	\$21.3 M
▶ Average Salary/Benefit	\$53,800	\$26,300
▶ Average Age	47	74
▶ Average Service	11.7 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	64
▶ Number Who Reported Earnings	19
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.06%
▶ 2016 Market Value	\$274.0M
▶ 2012-2016 (Annualized)	9.20%
▶ 1985-2016 (Annualized)	9.19%

Franklin Regional

278 Main Street
Suite 311
Greenfield, MA 01301
Phone 413-774-4837
Fax 413-774-5677

Board Members

Sandra A. Hanks (Chairperson),
Paula Light, Paul Mokrzecki,
Mary A. Stokarski, Gabrielle H. Voelker

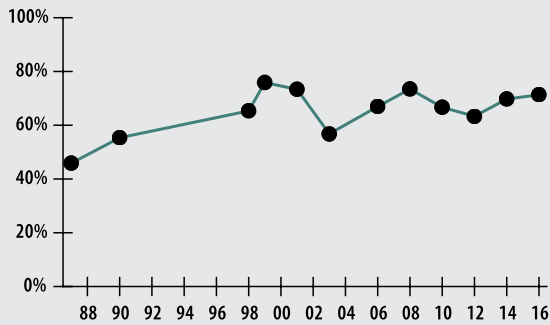
Board Administrator

Dale Kowacki

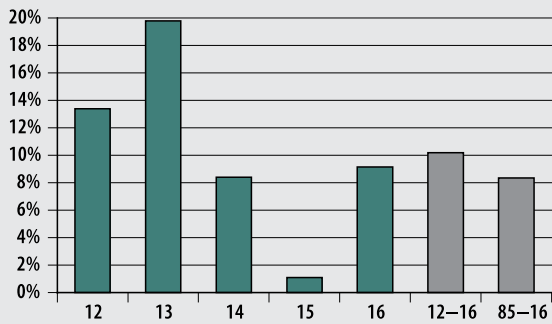
Board Meeting

Usually meets the last Wednesday
of each month

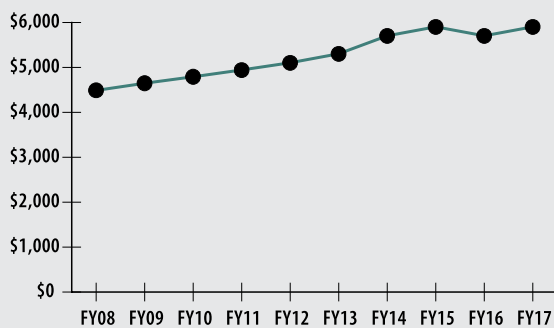
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.36%

31 years 2015

8.34%

30 years 2014

8.59%

10 years 2016

6.17%

10 years 2015

6.57%

10 years 2014

7.25%

5 years 2016

10.20%

5 years 2015

8.49%

5 years 2014

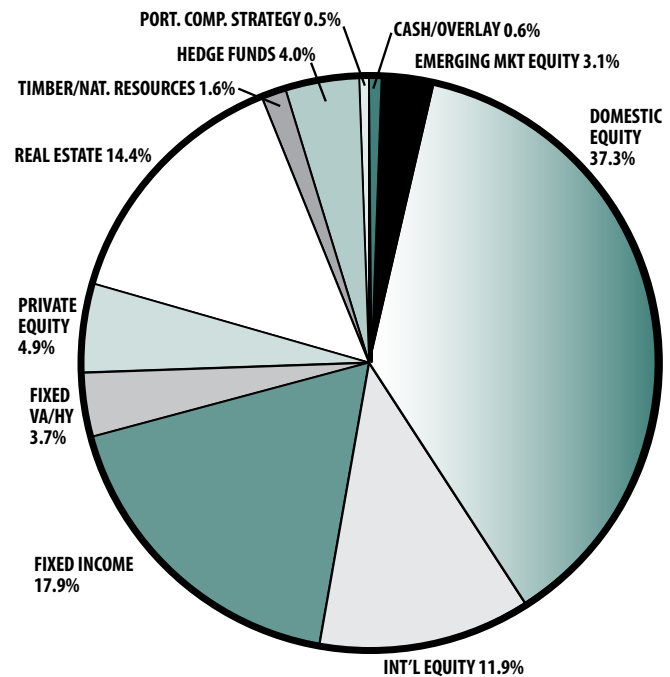
11.39%

ACTUARIAL

▶ Funded Ratio	71.4%
▶ Date of Last Valuation	01/16
▶ Actuary	KMS Actuaries
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$48.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.9 M

	ACTIVE	RETIRED
▶ Number of Members	933	550
▶ Total Payroll/Benefit	\$33.6 M	\$8.6 M
▶ Average Salary/Benefit	\$36,000	\$15,600
▶ Average Age	48	72
▶ Average Service	10.5 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	22
▶ Number Who Reported Earnings	5
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	9.16%
▶ 2016 Market Value	\$128.4M
▶ 2012-2016 (Annualized)	10.20%
▶ 1985-2016 (Annualized)	8.36%

Gardner

City Hall, Room 17
95 Pleasant Street
Gardner, MA 01440
Phone 978-630-4006
Fax 978-630-4012

Board Members

Denise M. Merriam (Chairperson),
Neil W. Janssens, Kevin McNerney,
Robert W. Newton, John Richard

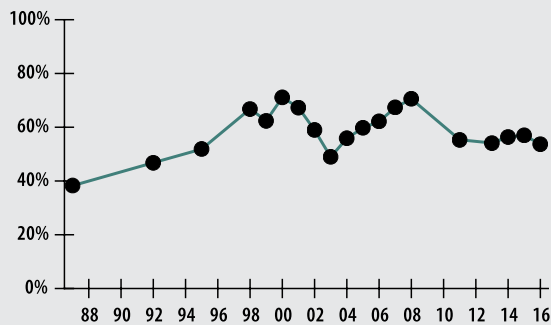
Board Administrator

Cheryl Bosse

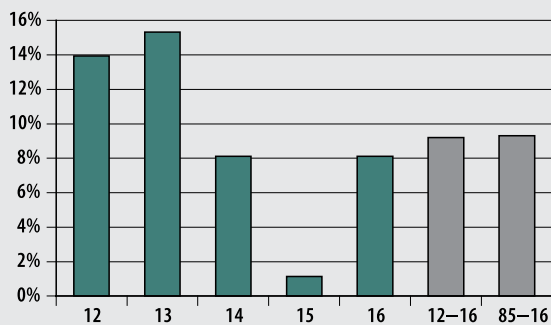
Board Meeting

Varies

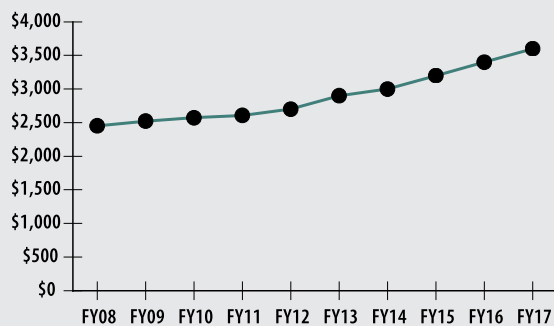
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.31%

31 years 2015

9.35%

30 years 2014

9.63%

10 years 2016

5.07%

10 years 2015

5.87%

10 years 2014

7.05%

5 years 2016

9.21%

5 years 2015

7.55%

5 years 2014

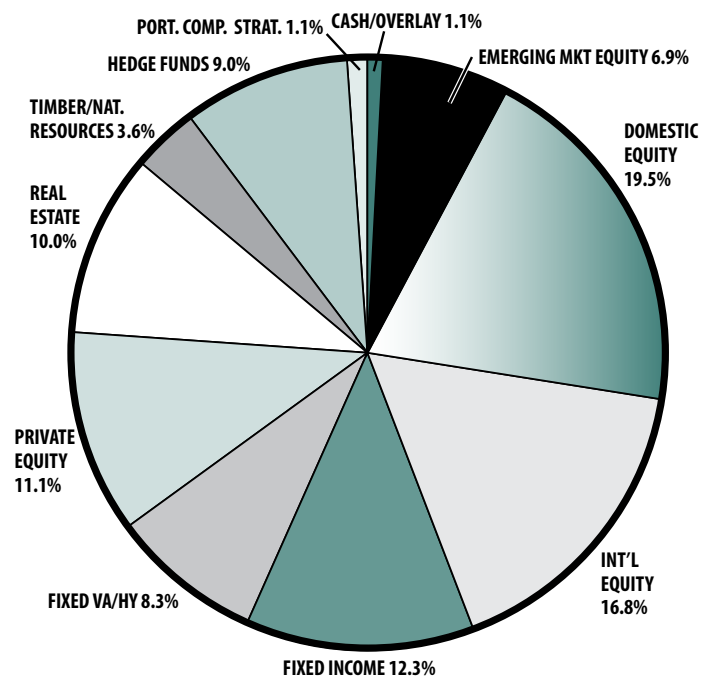
10.06%

ACTUARIAL

▶ Funded Ratio	53.7%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$40.0 M
▶ Total Pension Appropriation (Fiscal 2017)	\$3.6 M

	ACTIVE	RETIRED
▶ Number of Members	276	235
▶ Total Payroll/Benefit	\$11.8 M	\$5.3 M
▶ Average Salary/Benefit	\$42,800	\$22,400
▶ Average Age	48	72
▶ Average Service	12.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	21
▶ Number Who Reported Earnings	4
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.12%
▶ 2016 Market Value	\$48.7M
▶ 2012-2016 (Annualized)	9.21%
▶ 1985-2016 (Annualized)	9.31%

Gloucester

127 Eastern Avenue, Lower Level
Gloucester, MA 01930
Phone 978-281-9744
Fax 978-281-9817

Board Members

Douglas A. MacArthur (Chairperson),
Kathleen Auld, Kenny Costa,
Melissa Hobbs, Donna Leete

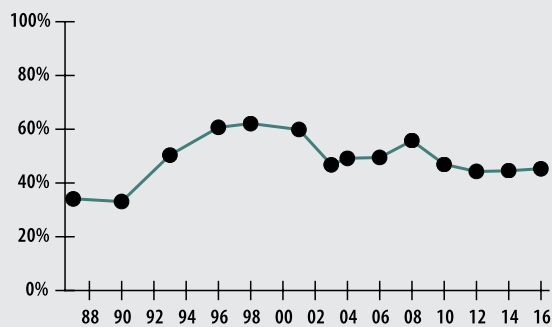
Board Administrator

Patricia Ivas

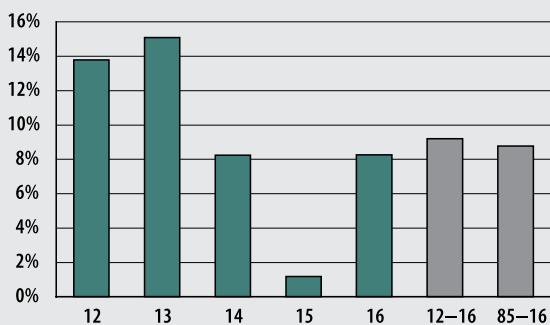
Board Meeting

Generally the last Wednesday
of each month

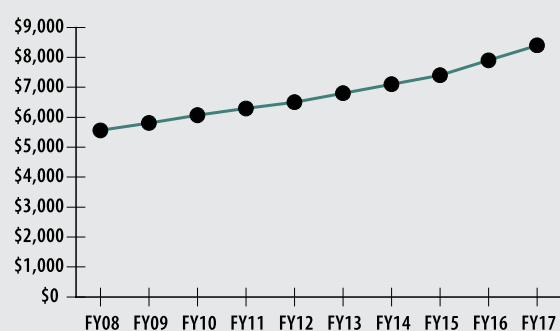
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.78%

31 years 2015

8.79%

30 years 2014

9.06%

10 years 2016

4.87%

10 years 2015

5.46%

10 years 2014

6.22%

5 years 2016

9.20%

5 years 2015

7.57%

5 years 2014

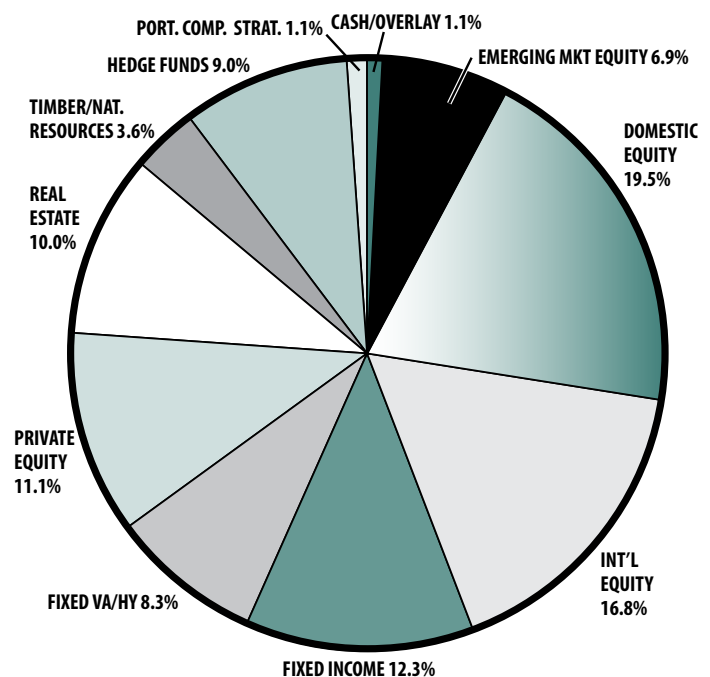
10.04%

ACTUARIAL

▶ Funded Ratio	45.3%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	6.75% Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$108.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$8.4 M

	ACTIVE	RETIRED
▶ Number of Members	534	463
▶ Total Payroll/Benefit	\$29.0 M	\$11.2 M
▶ Average Salary/Benefit	\$54,300	\$24,100
▶ Average Age	51	NA
▶ Average Service	12.5 years	NA

ASSET ALLOCATION (12/31/16)

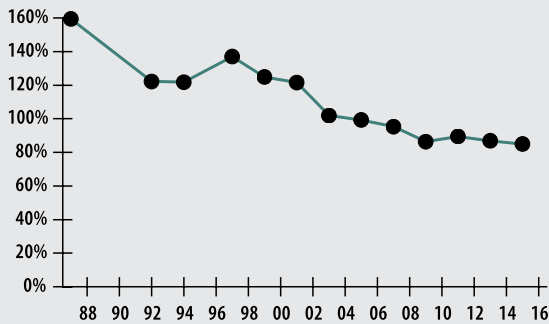


EARNED INCOME OF DISABILITY RETIREES (2015)

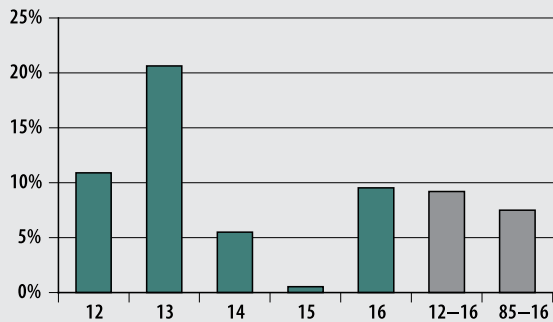
▶ Number of Disability Retirees	39
▶ Number Who Reported Earnings	13
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.26%
▶ 2016 Market Value	\$92.6M
▶ 2012-2016 (Annualized)	9.20%
▶ 1985-2016 (Annualized)	8.78%

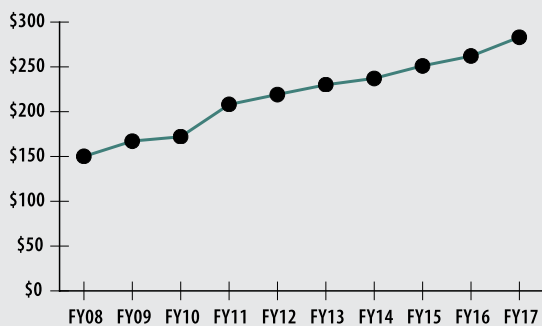
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

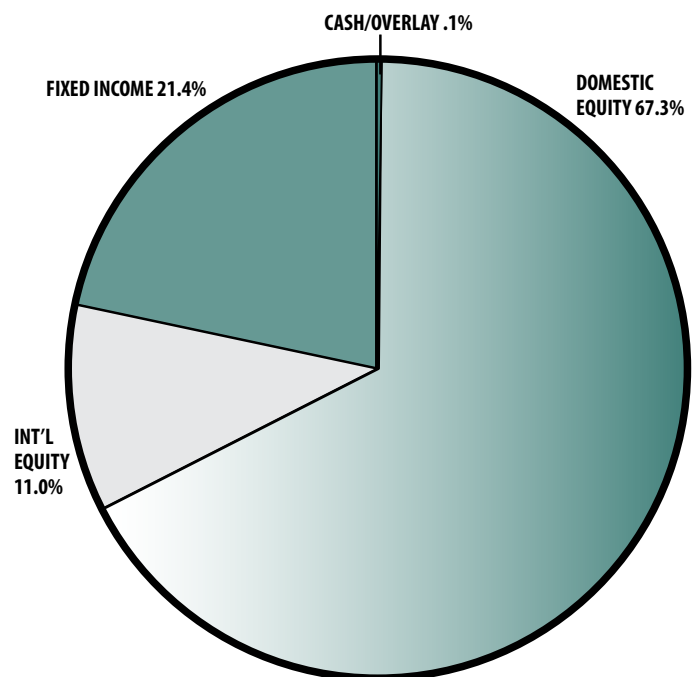
32 years 2016 7.53%	31 years 2015 7.46%	30 years 2014 7.70%
10 years 2016 6.64%	10 years 2015 6.61%	10 years 2014 6.95%
5 years 2016 9.23%	5 years 2015 7.31%	5 years 2014 9.70%

ACTUARIAL

▶ Funded Ratio	85.0%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.00%
▶ Funding Schedule	8.0% Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$2.5 M
▶ Total Pension Appropriation (Fiscal 2017)	\$283,000

	ACTIVE	RETIRED
▶ Number of Members	41	22
▶ Total Payroll/Benefit	\$2.7 M	\$573,000
▶ Average Salary/Benefit	\$65,200	\$26,000
▶ Average Age	52	72
▶ Average Service	18.8 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	1
▶ Number Who Reported Earnings	0
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	9.54%
▶ 2016 Market Value	\$16.0M
▶ 2012-2016 (Annualized)	9.23%
▶ 1985-2016 (Annualized)	7.53%

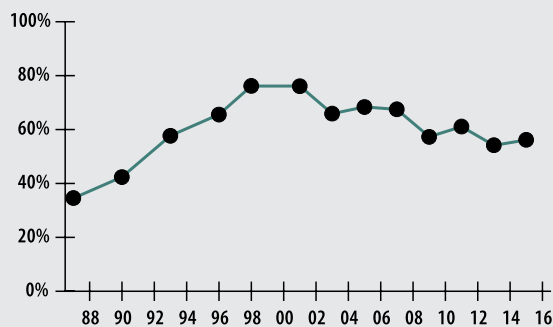
Greenfield

Town Hall
14 Court Square
Greenfield, MA 01301
Phone 413-772-1503
Fax 413-772-1582

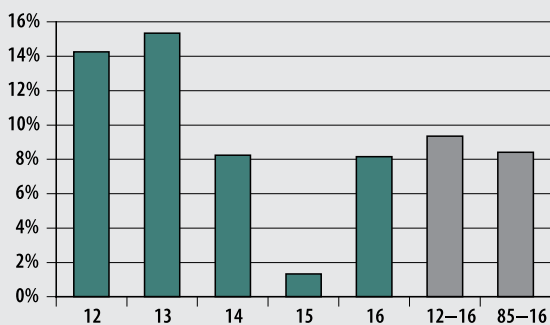
Board Members
William P. Devino (Chairperson),
Elizabeth Braccia, Marilyn Matysiewicz,
Betty L. Rice, Frances K. Stotz

Board Administrator
Shari Hildreth
Board Meeting
Varies

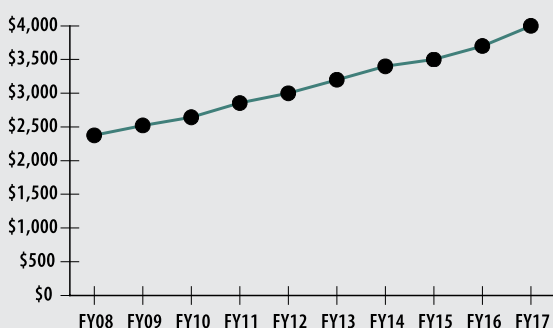
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

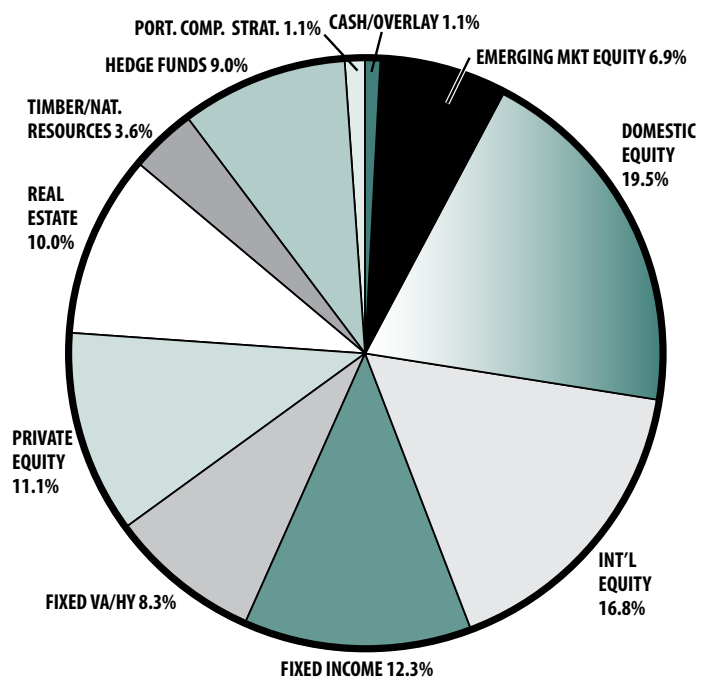
32 years 2016 8.42%	31 years 2015 8.42%	30 years 2014 8.67%
10 years 2016 5.19%	10 years 2015 5.72%	10 years 2014 6.60%
5 years 2016 9.35%	5 years 2015 7.74%	5 years 2014 10.22%

ACTUARIAL

▶ Funded Ratio	56.2%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.60%
▶ Funding Schedule	6.3% Total Increasing
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$44.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$4.0 M

	ACTIVE	RETIRED
▶ Number of Members	427	259
▶ Total Payroll/Benefit	\$16.1 M	\$5.8 M
▶ Average Salary/Benefit	\$37,600	\$22,400
▶ Average Age	47	71
▶ Average Service	9.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	41
▶ Number Who Reported Earnings	19
▶ Number of Excess Earners	6
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.16%
▶ 2016 Market Value	\$61.4M
▶ 2012-2016 (Annualized)	9.35%
▶ 1985-2016 (Annualized)	8.42%

Hampden County Regional

Agawam Corporate Center
67 Hunt Street, Suite 116
Agawam, MA 01001
Phone 413-737-1344
Fax 413-732-7999

Board Members

Richard M. Theroux (Chairperson),
Patricia C. Donovan, Patrick O'Neil,
Laurel Placzek, Karl Schmaelzle

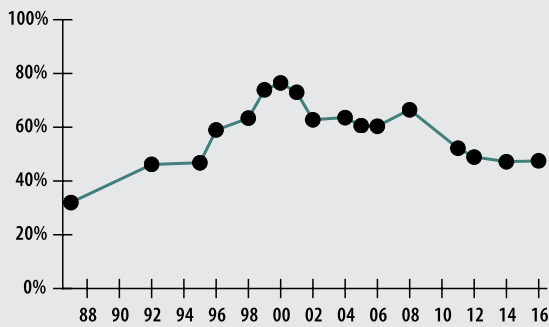
Board Administrator

Julianne Bartley

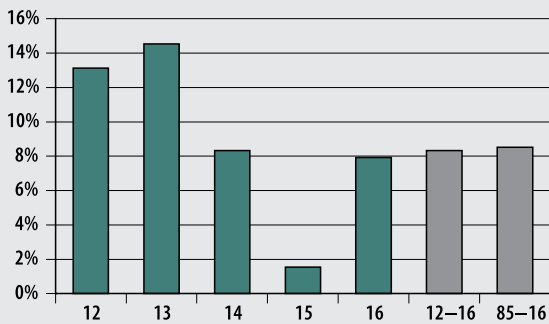
Board Meeting

Next to the last business day of each month

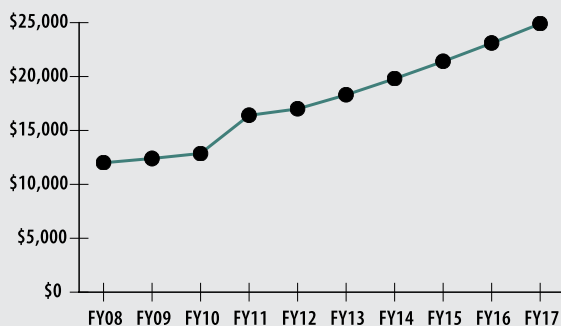
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.52%

31 years 2015

8.54%

30 years 2014

8.78%

10 years 2016

4.89%

10 years 2015

5.37%

10 years 2014

5.91%

5 years 2016

8.99%

5 years 2015

7.57%

5 years 2014

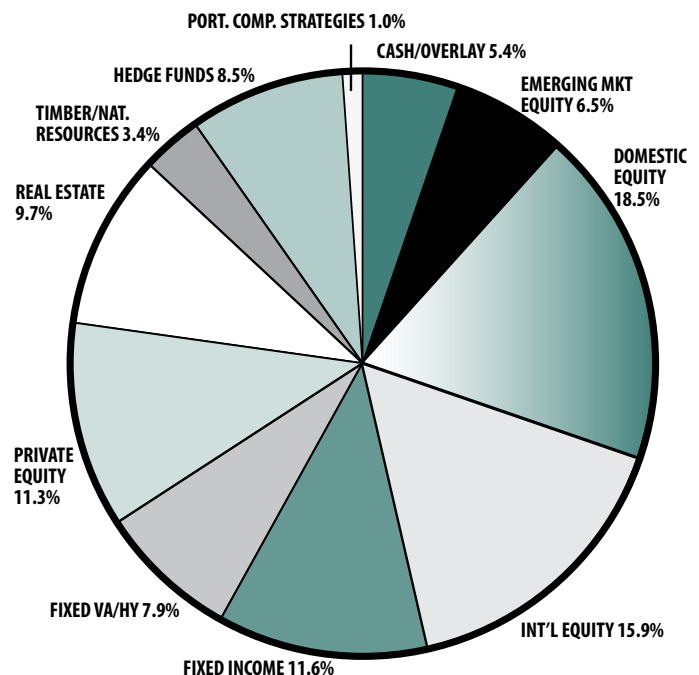
9.84%

ACTUARIAL

▶ Funded Ratio	47.5%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$344.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$24.9 M

▶ Number of Members	2,582	1,657
▶ Total Payroll/Benefit	\$103.0 M	\$33.3 M
▶ Average Salary/Benefit	\$39,900	\$20,100
▶ Average Age	49	73
▶ Average Service	12.0 years	NA

ASSET ALLOCATION (12/31/16)

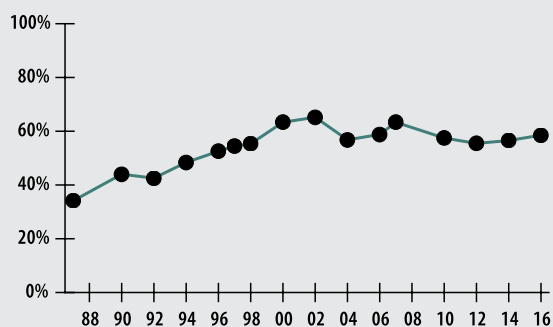


EARNED INCOME OF DISABILITY RETIREES (2015)

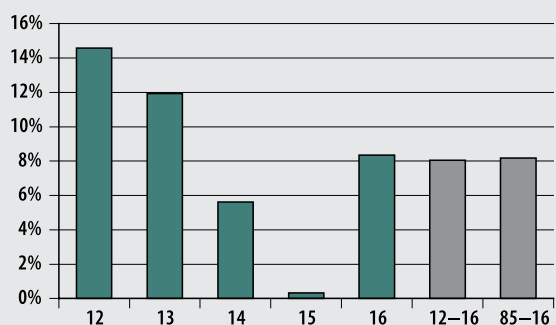
▶ Number of Disability Retirees	103
▶ Number Who Reported Earnings	31
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.93%
▶ 2016 Market Value	\$319.5M
▶ 2012-2016 (Annualized)	8.99%
▶ 1985-2016 (Annualized)	8.52%

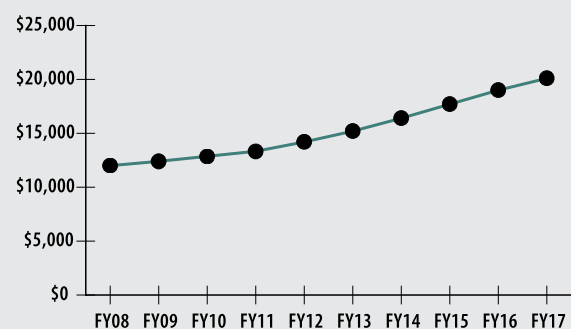
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

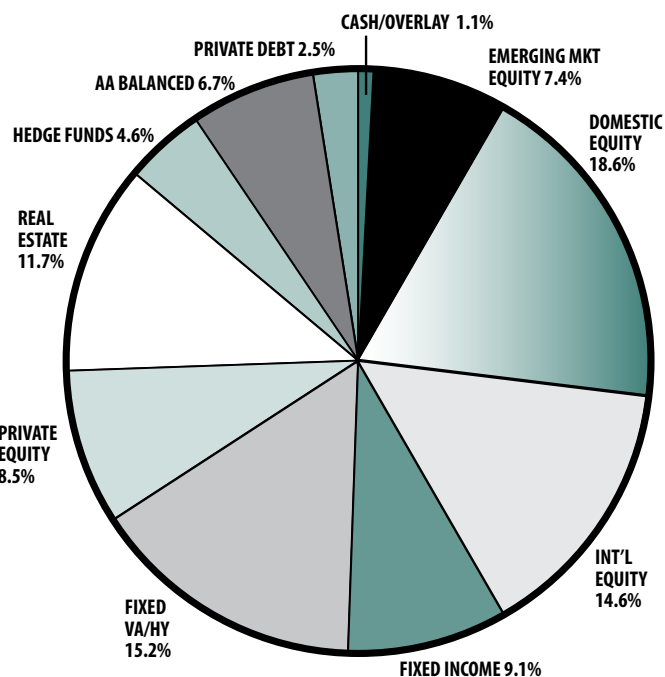
32 years 2016 8.19%	31 years 2015 8.19%	30 years 2014 8.46%
10 years 2016 5.02%	10 years 2015 5.67%	10 years 2014 6.44%
5 years 2016 8.05%	5 years 2015 6.48%	5 years 2014 9.13%

ACTUARIAL

▶ Funded Ratio	58.5%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$192.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$20.1 M

	ACTIVE	RETIRED
▶ Number of Members	1,816	1,210
▶ Total Payroll/Benefit	\$75.4 M	\$23.8 M
▶ Average Salary/Benefit	\$41,500	\$19,700
▶ Average Age	49	72
▶ Average Service	12.0 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	73
▶ Number Who Reported Earnings	29
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$13,082.04

▶ 2016 Return	8.36%
▶ 2016 Market Value	\$274.7M
▶ 2012-2016 (Annualized)	8.05%
▶ 1985-2016 (Annualized)	8.19%

Haverhill

4 Summer Street
Room 303
Haverhill, MA 01830-5843
Phone 978-374-2358
Fax 978-374-2353

Board Members

William J. Klueber (Chairperson),
Charles Benevento, James P. Cleary, III, Esq.,
Richard MacDonald, Lewis F. Poore, Jr.

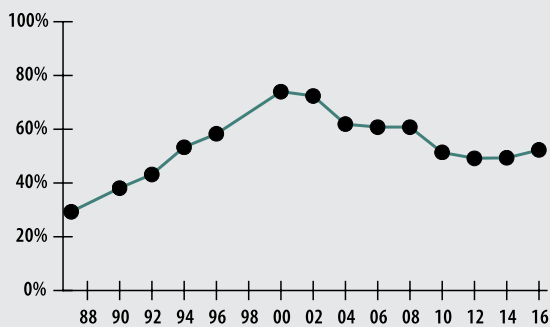
Board Administrator

Sheryl C. Trezise

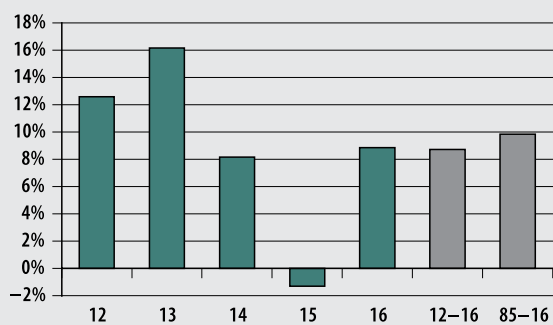
Board Meeting

Second Tuesday each month at 9:00 am

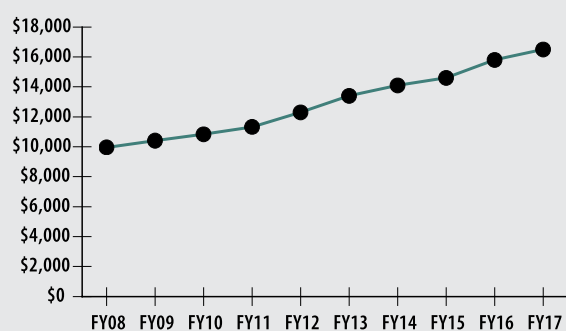
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.85%

31 years 2015

9.88%

30 years 2014

10.27%

10 years 2016

5.60%

10 years 2015

6.15%

10 years 2014

7.13%

5 years 2016

8.73%

5 years 2015

6.93%

5 years 2014

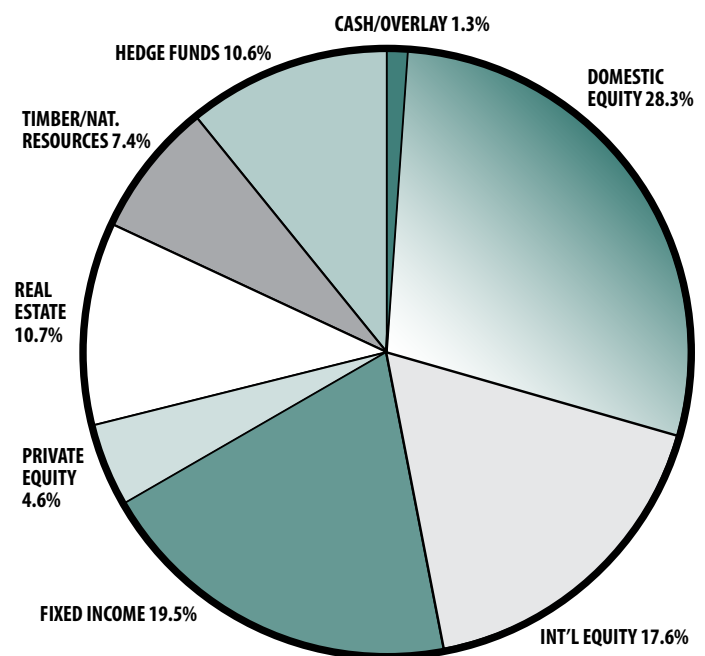
10.18%

ACTUARIAL

▶ Funded Ratio	52.3%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$165.6 M
▶ Total Pension Appropriation (Fiscal 2017)	\$16.5 M

	ACTIVE	RETIRED
▶ Number of Members	887	1,074
▶ Total Payroll/Benefit	\$38.3 M	\$23.8 M
▶ Average Salary/Benefit	\$43,100	\$22,100
▶ Average Age	48	73
▶ Average Service	12.7 years	NA

ASSET ALLOCATION (12/31/16)

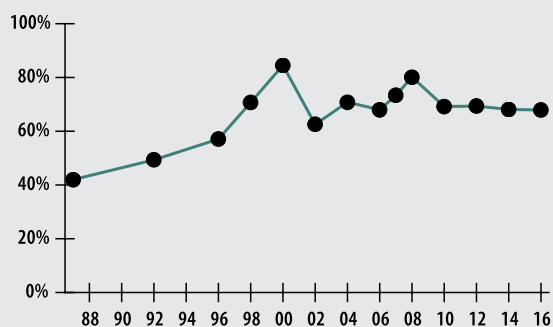


EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	73
▶ Number Who Reported Earnings	19
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.86%
▶ 2016 Market Value	\$178.7M
▶ 2012-2016 (Annualized)	8.73%
▶ 1985-2016 (Annualized)	9.85%

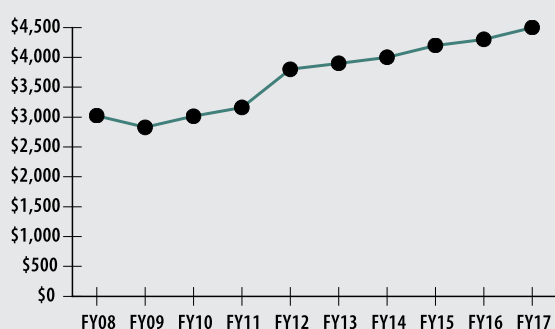
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
9.00%

31 years 2015
9.01%

30 years 2014
9.34%

10 years 2016
4.56%

10 years 2015
5.32%

10 years 2014
6.64%

5 years 2016
7.89%

5 years 2015
6.31%

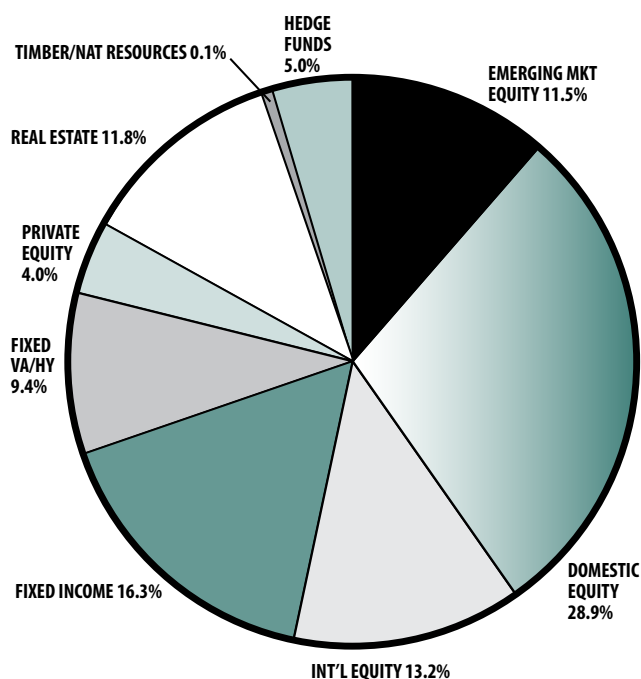
5 years 2014
9.16%

ACTUARIAL

▶ Funded Ratio	67.9%
▶ Date of Last Valuation	01/16
▶ Actuary	KMS Actuaries
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$47.8 M
▶ Total Pension Appropriation (Fiscal 2017)	\$4.5 M

	ACTIVE	RETIRED
▶ Number of Members	648	317
▶ Total Payroll/Benefit	\$30.2 M	\$7.7 M
▶ Average Salary/Benefit	\$46,600	\$24,300
▶ Average Age	48	74
▶ Average Service	9.8 years	NA

ASSET ALLOCATION (12/31/16)

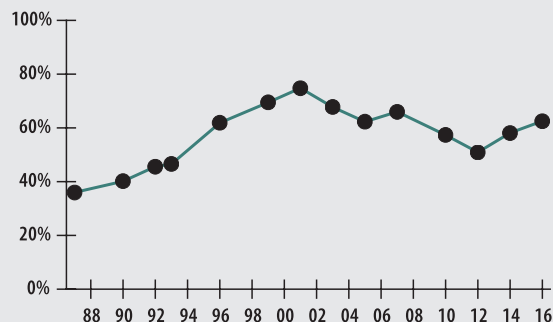


EARNED INCOME OF DISABILITY RETIREES (2015)

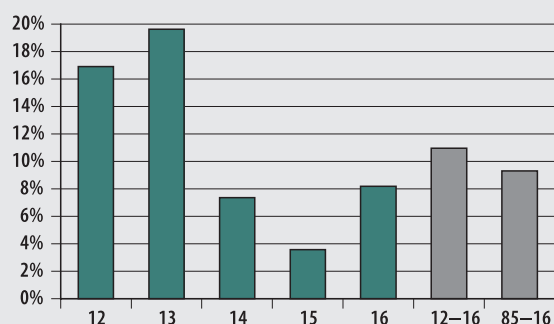
▶ Number of Disability Retirees	9
▶ Number Who Reported Earnings	1
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.71%
▶ 2016 Market Value	\$102.5M
▶ 2012-2016 (Annualized)	7.89%
▶ 1985-2016 (Annualized)	9.00%

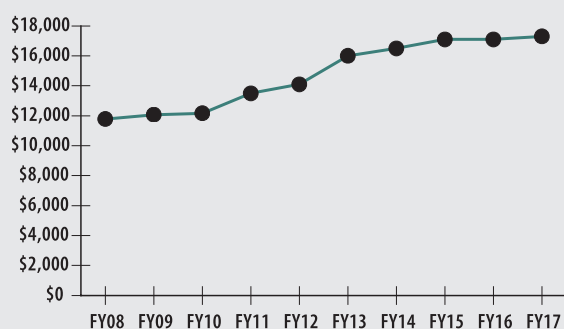
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

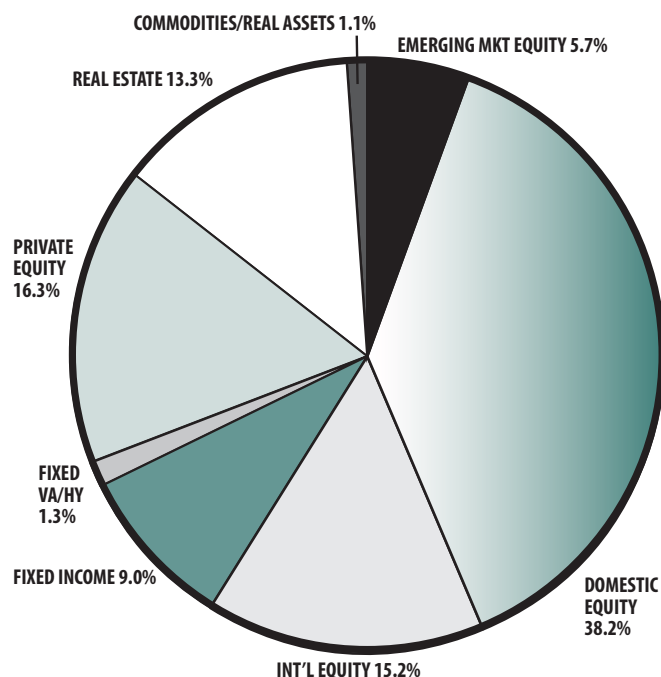
32 years 2016 9.33%	31 years 2015 9.37%	30 years 2014 9.57%
10 years 2016 6.16%	10 years 2015 6.51%	10 years 2014 6.78%
5 years 2016 10.98%	5 years 2015 9.23%	5 years 2014 11.94%

ACTUARIAL

▶ Funded Ratio	62.5%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.63%
▶ Funding Schedule	3.67% Total Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$148.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$17.3 M

	ACTIVE	RETIRED
▶ Number of Members	1,138	935
▶ Total Payroll/Benefit	\$53.8 M	\$23.7 M
▶ Average Salary/Benefit	\$47,200	\$25,300
▶ Average Age	46	NA
▶ Average Service	12.7 years	NA

ASSET ALLOCATION (12/31/16)

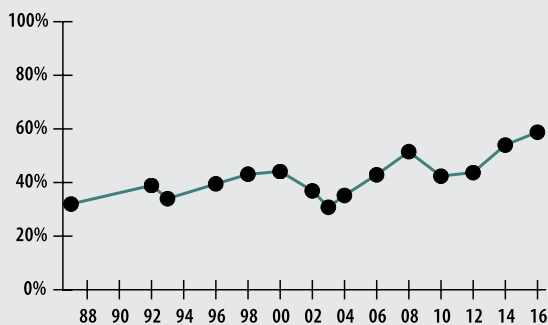


EARNED INCOME OF DISABILITY RETIREES (2015)

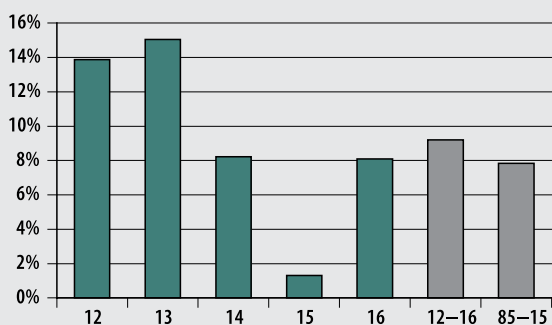
▶ Number of Disability Retirees	72
▶ Number Who Reported Earnings	16
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.20%
▶ 2016 Market Value	\$252.3M
▶ 2012-2016 (Annualized)	10.98%
▶ 1985-2016 (Annualized)	9.33%

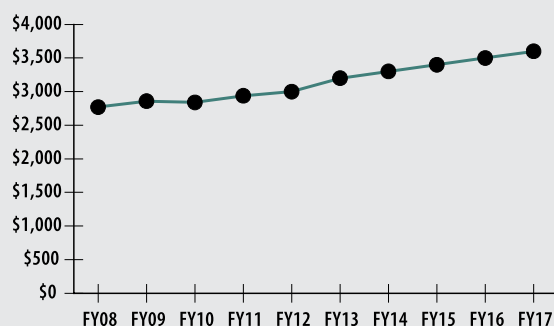
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

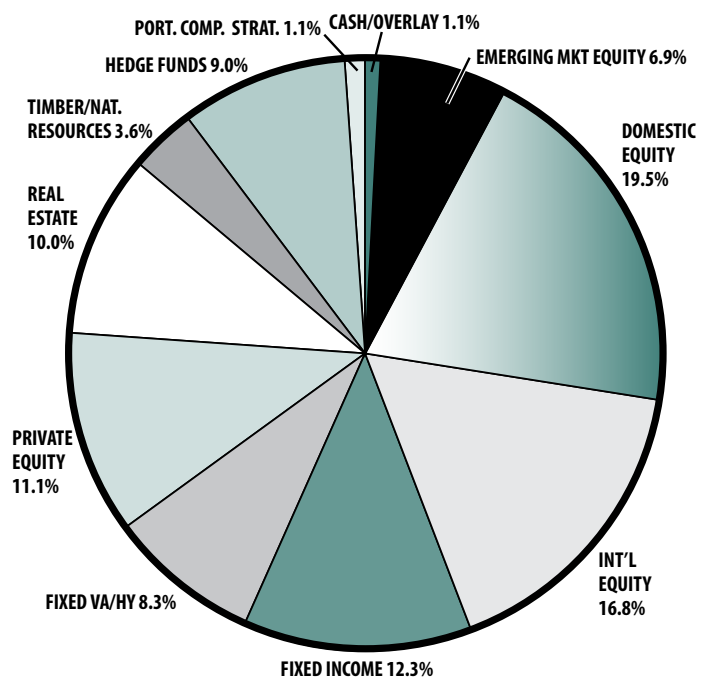
32 years 2016 7.83%	31 years 2015 7.82%	30 years 2014 8.05%
10 years 2016 5.09%	10 years 2015 5.88%	10 years 2014 7.04%
5 years 2016 9.20%	5 years 2015 7.54%	5 years 2014 9.97%

ACTUARIAL

▶ Funded Ratio	58.8%
▶ Date of Last Valuation	01/16
▶ Actuary	Odyssey Advisors
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	3.74% Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$27.0 M
▶ Total Pension Appropriation (Fiscal 2017)	\$3.6 M

	ACTIVE	RETIRED
▶ Number of Members	177	143
▶ Total Payroll/Benefit	\$9.7 M	\$3.9 M
▶ Average Salary/Benefit	\$54,800	\$27,000
▶ Average Age	51	NA
▶ Average Service	10.7 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	18
▶ Number Who Reported Earnings	11
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.10%
▶ 2016 Market Value	\$41.4M
▶ 2012-2016 (Annualized)	9.20%
▶ 1985-2016 (Annualized)	7.83%

Lawrence

354 Merrimack Street
Suite 302, Entry C
Lawrence, MA 01843
Phone 978-620-3570
Fax 978-683-5894

Board Members

William F. Bateman (Chairperson),
Ramona Ceballos, Thomas M. Cuddy,
Kevin Loughlin, Gina M. Rizzo

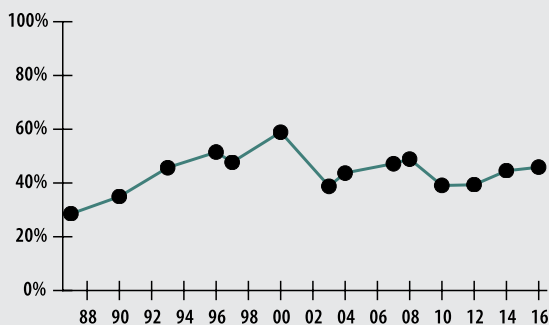
Board Administrator

Diane Cockroft

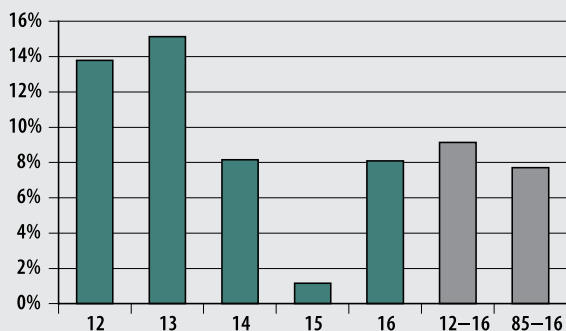
Board Meeting

Varies

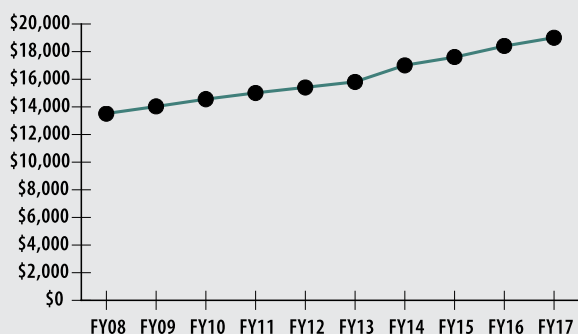
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
7.71%

31 years 2015
7.70%

30 years 2014
7.92%

10 years 2016
4.87%

10 years 2015
5.29%

10 years 2014
5.81%

5 years 2016
9.15%

5 years 2015
7.52%

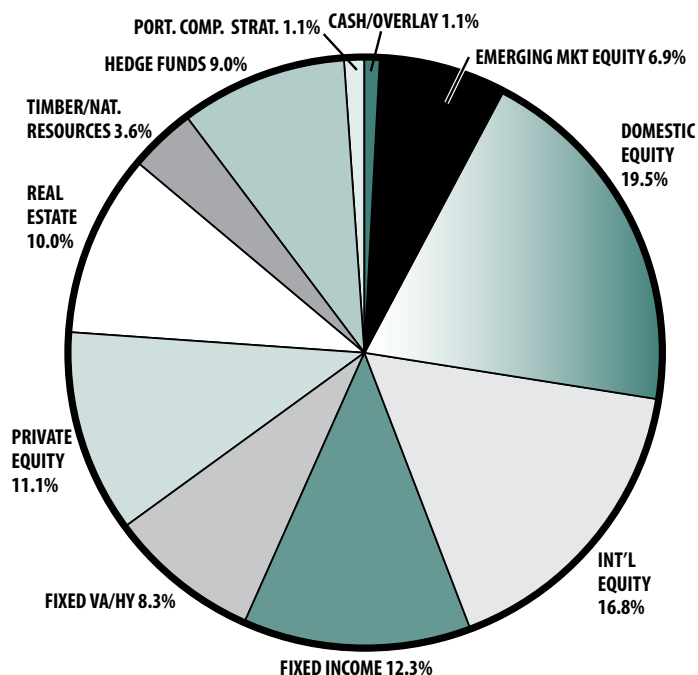
5 years 2014
10.03%

ACTUARIAL

▶ Funded Ratio	45.9%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	3.6% Increasing
▶ Year Fully Funded	2037
▶ Unfunded Liability	\$215.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$19.0 M

	ACTIVE	RETIRED
▶ Number of Members	1,600	887
▶ Total Payroll/Benefit	\$70.0 M	\$23.0 M
▶ Average Salary/Benefit	\$43,700	\$26,000
▶ Average Age	44	74
▶ Average Service	10.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	103
▶ Number Who Reported Earnings	24
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.09%
▶ 2016 Market Value	\$196.4M
▶ 2012-2016 (Annualized)	9.15%
▶ 1985-2016 (Annualized)	7.71%

Leominster

City Hall, Room 15
25 West Street
Leominster, MA 01453
Phone 978-534-7507, ext. 246
Fax 978-534-7508

Board Members

John J. Richard (Chairperson),
Douglas Farwell, David R. LaPlante,
John P. Perry, William Thibodeau

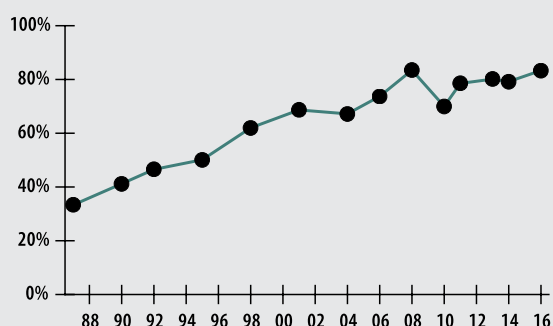
Board Administrator

Erin S. Kelley

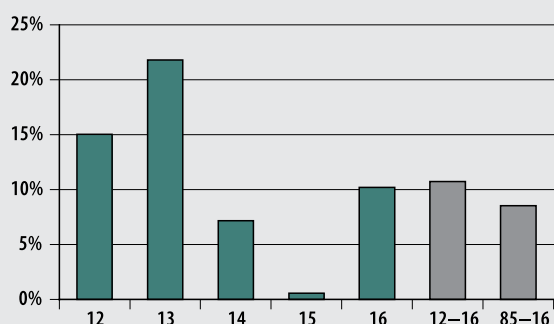
Board Meeting

Varies

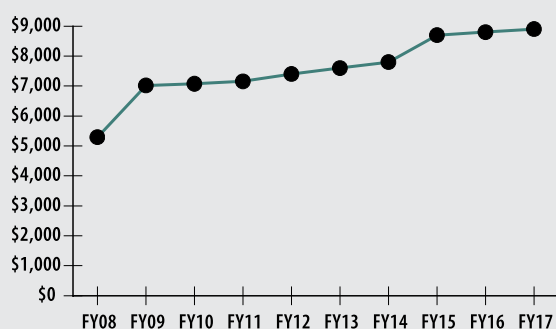
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.55%

31 years 2015

8.50%

30 years 2014

8.77%

10 years 2016

5.75%

10 years 2015

6.35%

10 years 2014

6.98%

5 years 2016

10.74%

5 years 2015

8.25%

5 years 2014

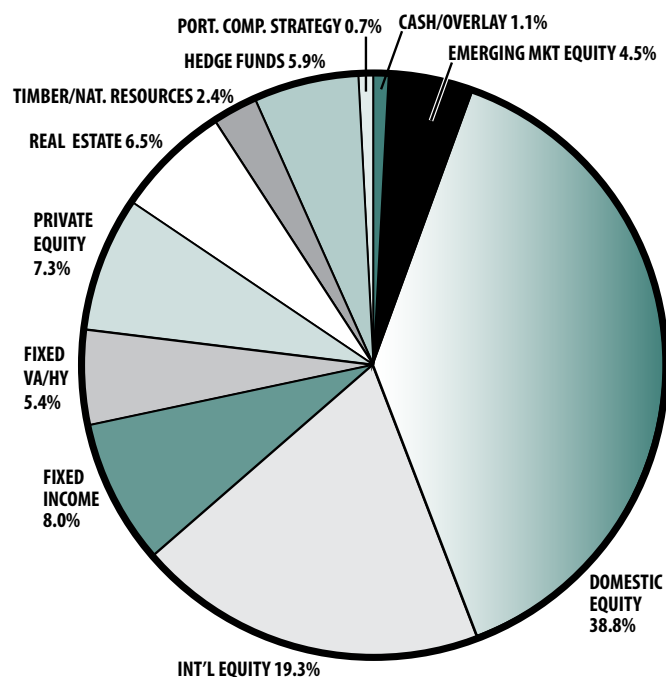
10.63%

ACTUARIAL

▶ Funded Ratio	83.3%
▶ Date of Last Valuation	01/15
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	5.50%
▶ Funding Schedule	Level
▶ Year Fully Funded	2021
▶ Unfunded Liability	\$31.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$8.9 M

	ACTIVE	RETIRED
▶ Number of Members	619	388
▶ Total Payroll/Benefit	\$27.4 M	\$8.3 M
▶ Average Salary/Benefit	\$44,300	\$21,400
▶ Average Age	46	74
▶ Average Service	11.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	29
▶ Number Who Reported Earnings	13
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	10.20%
▶ 2016 Market Value	\$175.7M
▶ 2012-2016 (Annualized)	10.74%
▶ 1985-2016 (Annualized)	8.55%

Lexington

1625 Massachusetts Avenue
Lexington, MA 02420
Phone 781-861-2720
Fax 781-861-2794

Board Members

Robert Cunha (Chairperson),
Alan Fields, Joseph Foley,
Carolyn Kosnoff, Frederick Weiss

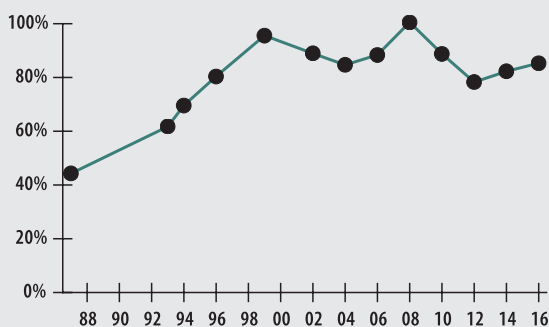
Board Administrator

Marguerite Oliva

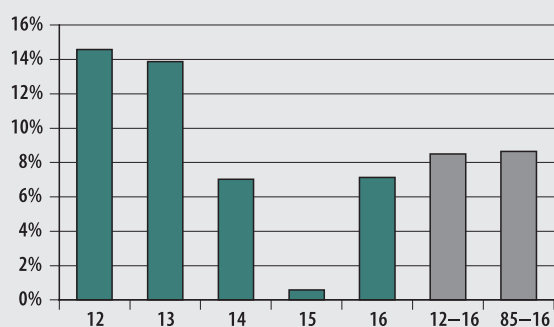
Board Meeting

Varies

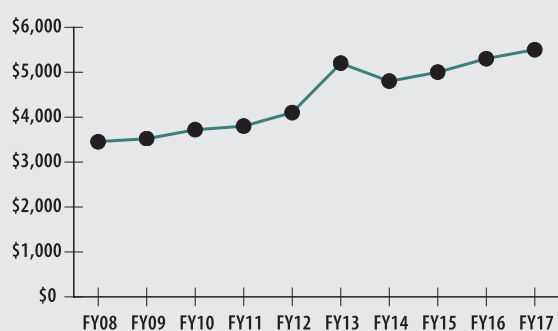
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.64%

31 years 2015

8.69%

30 years 2014

8.97%

10 years 2016

4.48%

10 years 2015

5.18%

10 years 2014

6.16%

5 years 2016

8.51%

5 years 2015

5.75%

5 years 2014

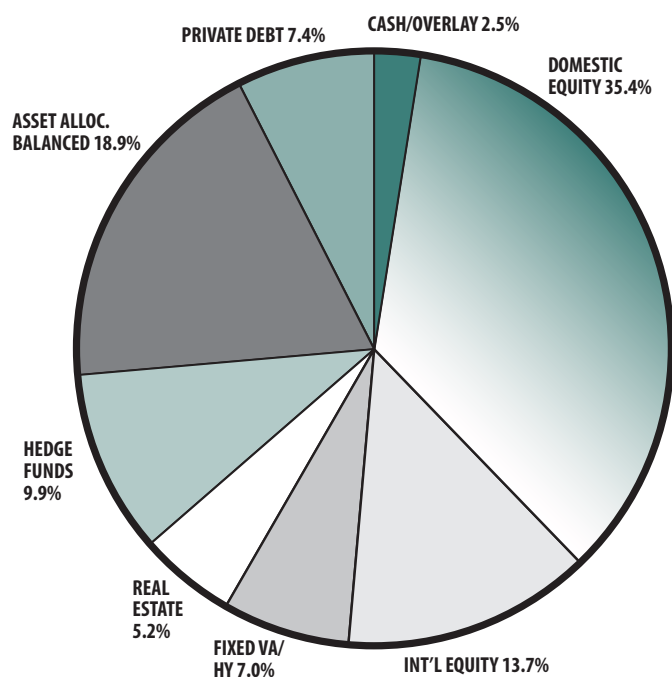
8.57%

ACTUARIAL

▶ Funded Ratio	85.3%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2024
▶ Unfunded Liability	\$24.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.5 M

	ACTIVE	RETIRED
▶ Number of Members	678	411
▶ Total Payroll/Benefit	\$36.1 M	\$9.9 M
▶ Average Salary/Benefit	\$53,300	\$24,200
▶ Average Age	NA	73
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	19
▶ Number Who Reported Earnings	10
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.14%
▶ 2016 Market Value	\$143.8M
▶ 2012-2016 (Annualized)	8.51%
▶ 1985-2016 (Annualized)	8.64%

Lowell

City Hall, Room 3
375 Merrimack Street
Lowell, MA 01852-5998
Phone 978-674-4094
Fax 978-446-7019

Board Members

Joseph Mahoney (Chairperson),
Michael M. Brennan, William Desrosiers,
David Keene, Brian T. Perry

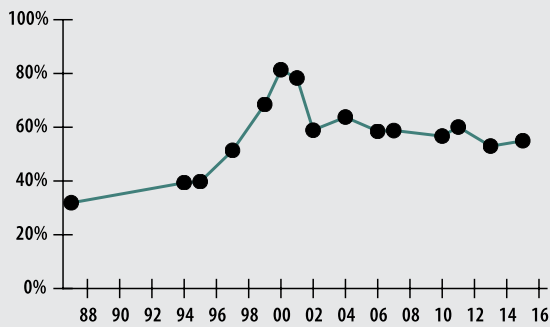
Board Administrator

Shannon Dowd

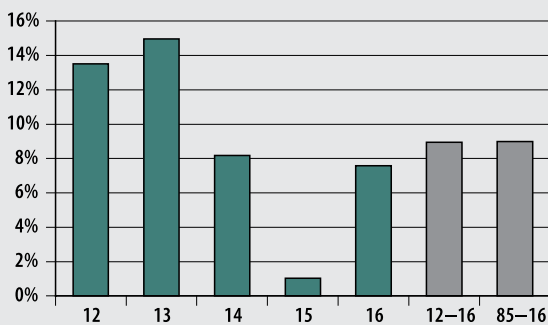
Board Meeting

Varies

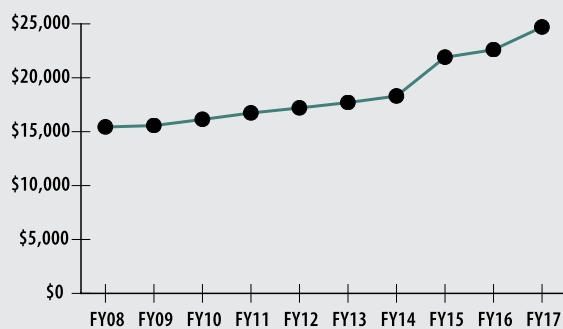
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

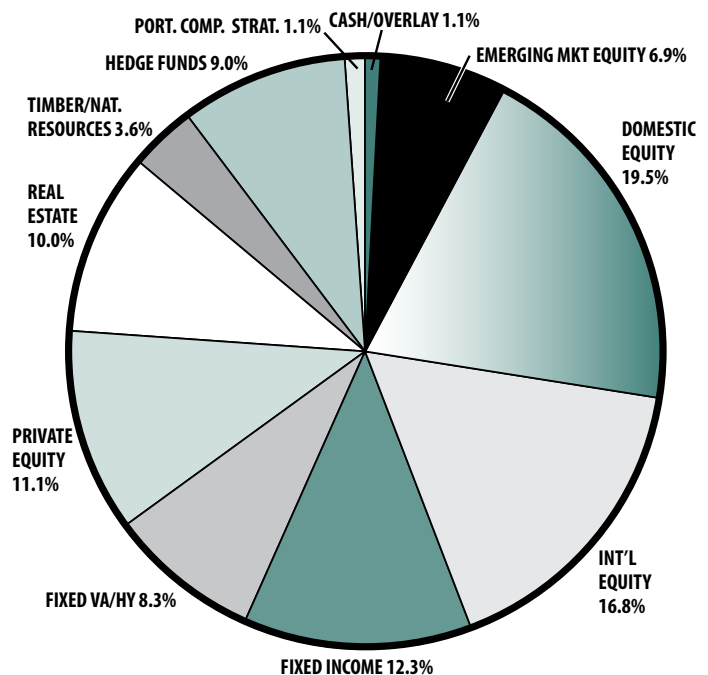
32 years 2016 8.99%	31 years 2015 9.04%	30 years 2014 9.32%
10 years 2016 4.86%	10 years 2015 5.73%	10 years 2014 6.83%
5 years 2016 8.94%	5 years 2015 7.42%	5 years 2014 9.90%

ACTUARIAL

▶ Funded Ratio	55.0%
▶ Date of Last Valuation	01/15
▶ Actuary	KMS Actuaries
▶ Assumed Rate of Return	8.00%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$251.3M
▶ Total Pension Appropriation (Fiscal 2017)	\$24.7 M

	ACTIVE	RETIRED
▶ Number of Members	1,702	1,193
▶ Total Payroll/Benefit	\$89.5 M	\$32.9 M
▶ Average Salary/Benefit	\$52,600	\$27,500
▶ Average Age	47	72
▶ Average Service	13.0 years	NA

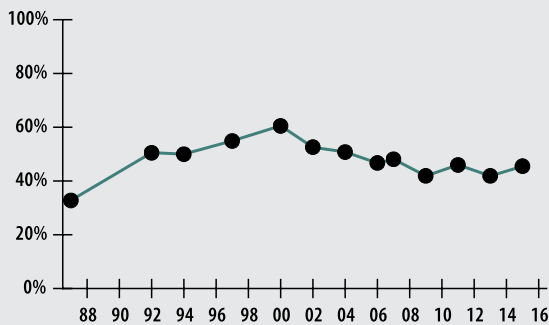
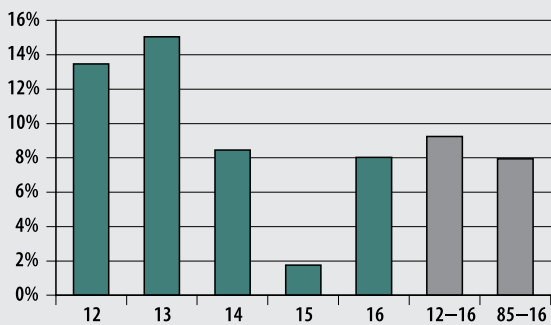
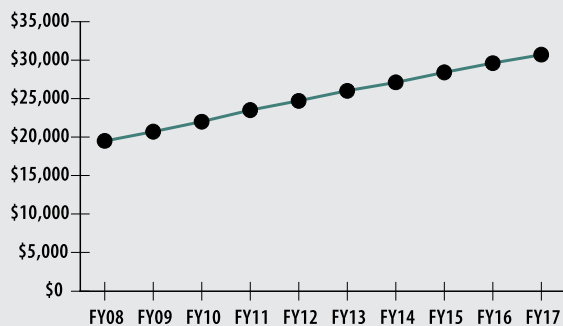
ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	155
▶ Number Who Reported Earnings	42
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$19,463.87

▶ 2016 Return	7.58%
▶ 2016 Market Value	\$329.4M
▶ 2012-2016 (Annualized)	8.94%
▶ 1985-2016 (Annualized)	8.99%

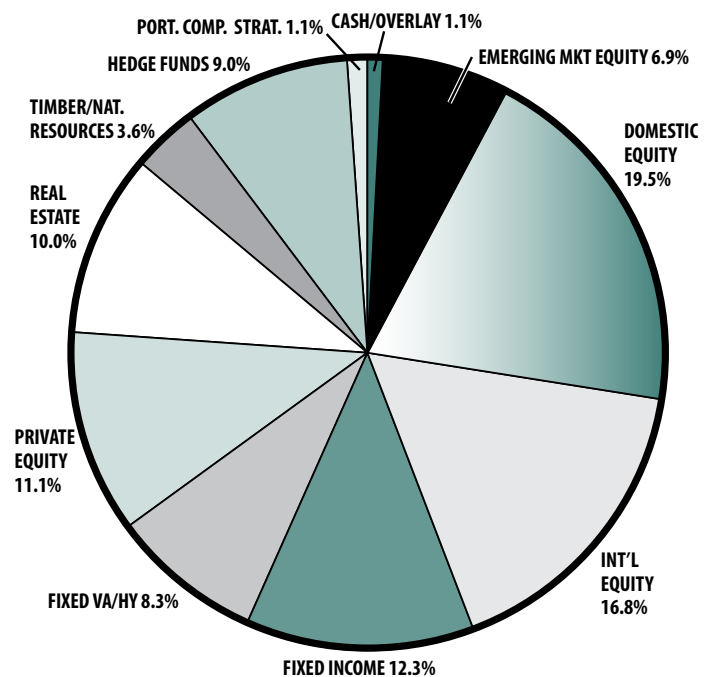
FUNDED RATIO (1987-2016)**INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)****10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)****INVESTMENT RETURN HISTORY**

32 years 2016 7.94%	31 years 2015 7.94%	30 years 2014 8.15%
10 years 2016 4.69%	10 years 2015 4.98%	10 years 2014 5.74%
5 years 2016 9.25%	5 years 2015 7.94%	5 years 2014 10.07%

ACTUARIAL

▶ Funded Ratio	45.5%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.60%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$320.8 M
▶ Total Pension Appropriation (Fiscal 2017)	\$30.7 M

	ACTIVE	RETIRED
▶ Number of Members	1,307	1,189
▶ Total Payroll/Benefit	73.5 M	\$33.8 M
▶ Average Salary/Benefit	\$56,200	\$28,400
▶ Average Age	50	75
▶ Average Service	15.4 years	NA

ASSET ALLOCATION (12/31/16)**EARNED INCOME OF DISABILITY RETIREES (2015)**

▶ Number of Disability Retirees	152
▶ Number Who Reported Earnings	38
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.03%
▶ 2016 Market Value	\$304.6M
▶ 2012-2016 (Annualized)	9.25%
▶ 1985-2016 (Annualized)	7.94%

Malden

17 Pleasant Street, 2nd Floor
Malden, MA 02148
Phone 781-397-7086
Fax 781-397-7358

Board Members

Warren Atkinson, Jr. (Chairperson),
Douglas Eisnor, Dominic Fermano,
Gregory Lucey, Charles Ranaghan

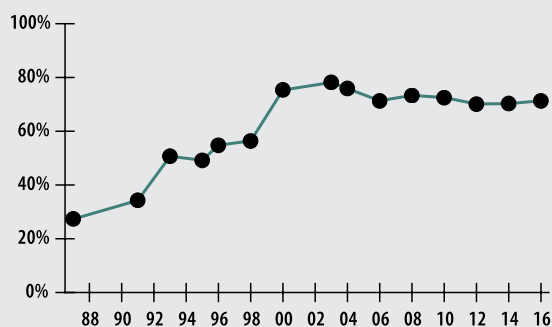
Board Administrator

James M. Ryan

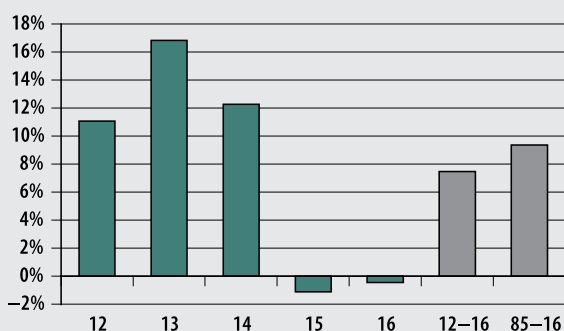
Board Meeting

Third Wednesday of each month

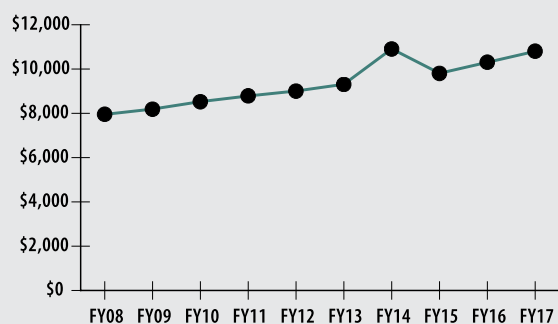
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.36%

31 years 2015

9.70%

30 years 2014

10.08%

10 years 2016

6.04%

10 years 2015

7.02%

10 years 2014

8.29%

5 years 2016

7.49%

5 years 2015

8.29%

5 years 2014

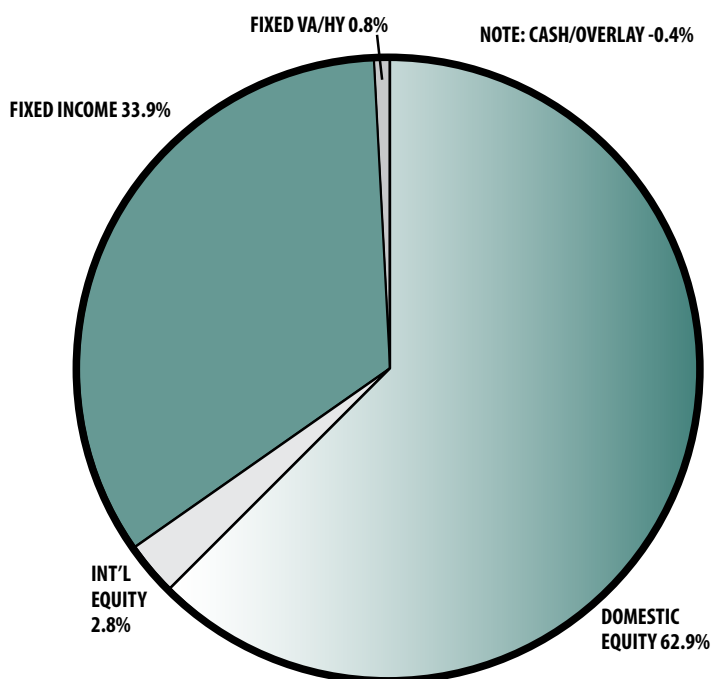
11.18%

ACTUARIAL

▶ Funded Ratio	71.3%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.69% Total Increasing
▶ Year Fully Funded	2030
▶ Unfunded Liability	\$90.8 M
▶ Total Pension Appropriation (Fiscal 2017)	\$10.8 M

	ACTIVE	RETIRED
▶ Number of Members	769	678
▶ Total Payroll/Benefit	\$39.9 M	\$18.6 M
▶ Average Salary/Benefit	\$51,800	\$27,400
▶ Average Age	49	73
▶ Average Service	13.3 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	88
▶ Number Who Reported Earnings	26
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$22,453.15

▶ 2016 Return	-.43%
▶ 2016 Market Value	\$214.6M
▶ 2012-2016 (Annualized)	7.49%
▶ 1985-2016 (Annualized)	9.36%

Marblehead

Mary Alley Municipal Building
7 Widger Road
Marblehead, MA 01945
Phone 781-639-3418
Fax 781-631-2617

Board Members

Robert F. Peck, Jr., Esq. (Chairperson),
Charles Gessner, Jason R. Gilliland,
Paul Jalbert, Alison Nieto

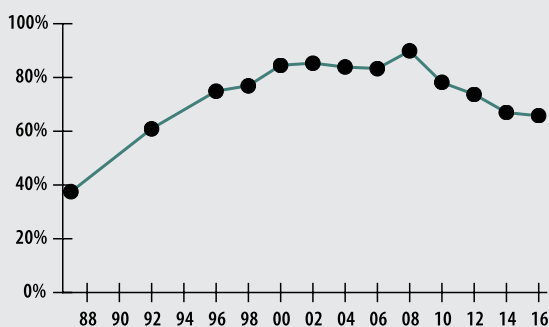
Board Administrator

Linda Gifford

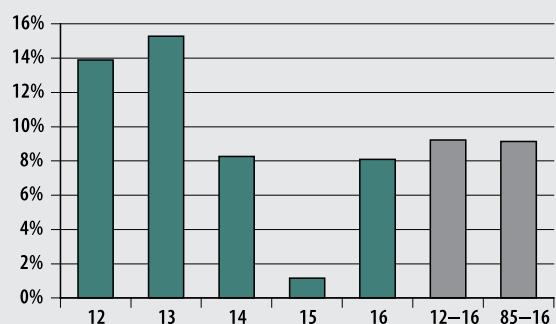
Board Meeting

Varies

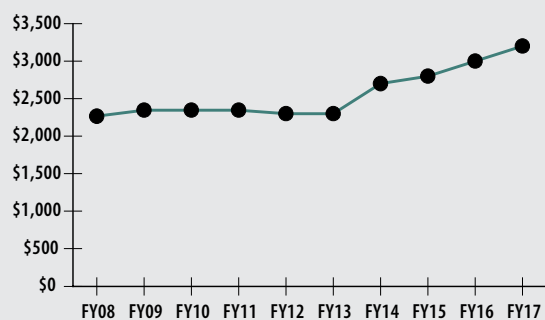
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.14%

31 years 2015

9.17%

30 years 2014

9.45%

10 years 2016

5.13%

10 years 2015

5.95%

10 years 2014

7.10%

5 years 2016

9.22%

5 years 2015

7.58%

5 years 2014

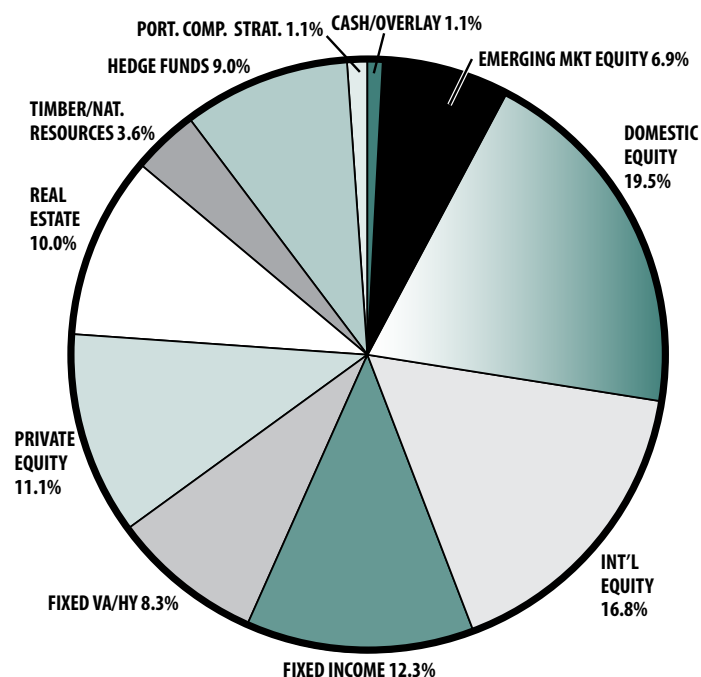
10.11%

ACTUARIAL

▶ Funded Ratio	65.8%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	8.0% Total Increasing
▶ Year Fully Funded	2038
▶ Unfunded Liability	\$45.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$3.2 M

	ACTIVE	RETIRED
▶ Number of Members	440	345
▶ Total Payroll/Benefit	\$20.3 M	\$8.3 M
▶ Average Salary/Benefit	\$46,100	\$24,100
▶ Average Age	47	74
▶ Average Service	10.0 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	18
▶ Number Who Reported Earnings	6
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.09%
▶ 2016 Market Value	\$89.9M
▶ 2012-2016 (Annualized)	9.22%
▶ 1985-2016 (Annualized)	9.14%

Board Members

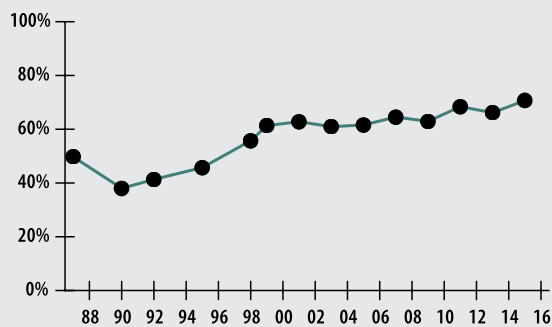
Gregory P. Brewster (Chairperson),
Thomas J. Abel, Christopher M. Sandini, Sr.,
Diane Smith, William S. Taylor

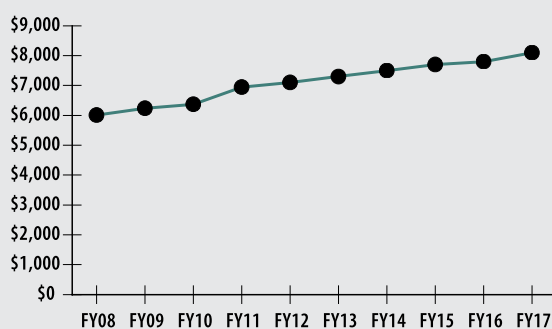
Board Administrator

Margaret R. Shea

Board Meeting

Varies

FUNDED RATIO (1987-2016)

INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)

10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)

INVESTMENT RETURN HISTORY
32 years 2016

8.31%

31 years 2015

8.30%

30 years 2014

8.61%

10 years 2016

5.17%

10 years 2015

5.63%

10 years 2014

6.41%

5 years 2016

7.71%

5 years 2015

6.47%

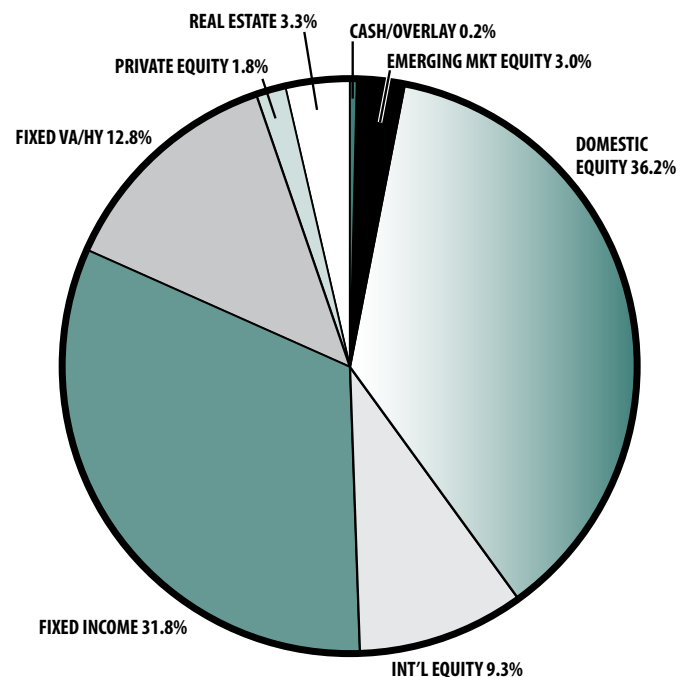
5 years 2014

9.08%

ACTUARIAL

▶ Funded Ratio	70.7%
▶ Date of Last Valuation	01/15
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	4.43% Total Increasing
▶ Year Fully Funded	2027
▶ Unfunded Liability	\$60.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$8.1 M

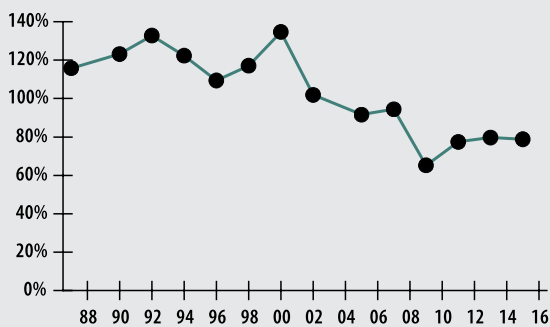
	ACTIVE	RETIRED
▶ Number of Members	661	377
▶ Total Payroll/Benefit	\$33.3 M	\$10.3 M
▶ Average Salary/Benefit	\$50,300	\$27,400
▶ Average Age	47	NA
▶ Average Service	12.2 years	NA

ASSET ALLOCATION (12/31/16)

EARNED INCOME OF DISABILITY RETIREES (2015)

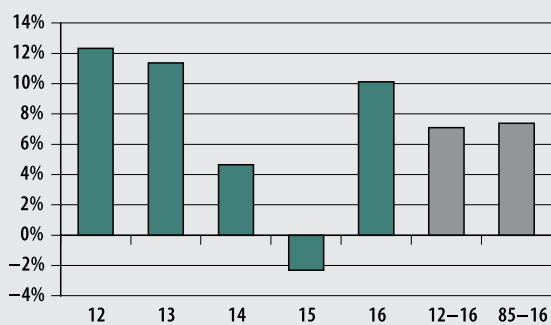
▶ Number of Disability Retirees	29
▶ Number Who Reported Earnings	9
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.52%
▶ 2016 Market Value	\$153.6M
▶ 2012-2016 (Annualized)	7.71%
▶ 1985-2016 (Annualized)	8.31%

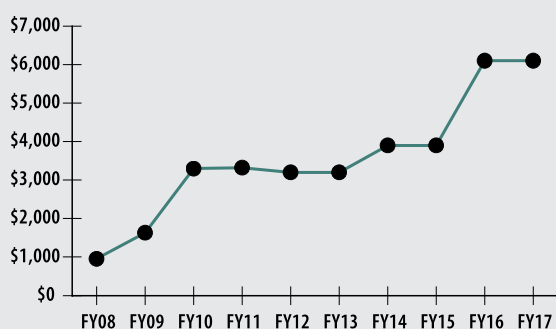
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

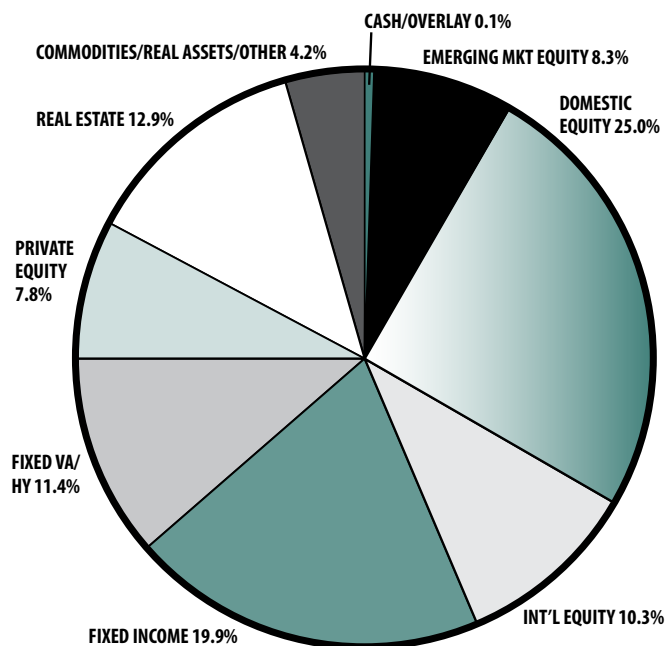
32 years 2016 7.38%	31 years 2015 7.29%	30 years 2014 7.63%
10 years 2016 4.50%	10 years 2015 4.63%	10 years 2014 5.41%
5 years 2016 7.09%	5 years 2015 5.57%	5 years 2014 8.62%

ACTUARIAL

▶ Funded Ratio	78.8%
▶ Date of Last Valuation	01/15
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	Level
▶ Year Fully Funded	2022
▶ Unfunded Liability	\$30.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$6.1 M

	ACTIVE	RETIRED
▶ Number of Members	337	130
▶ Total Payroll/Benefit	\$31.2 M	\$5.0 M
▶ Average Salary/Benefit	\$92,700	\$38,600
▶ Average Age	51	70
▶ Average Service	14.9 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	0
▶ Number Who Reported Earnings	0
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	10.13%
▶ 2016 Market Value	\$128.3M
▶ 2012-2016 (Annualized)	7.09%
▶ 1985-2016 (Annualized)	7.38%

Massport

One Harborside Drive
Suite 2005
East Boston, MA 02128-2909
Phone 617-568-3951
Fax 617-568-3957

Board Members

James Hoyte (Chairperson),
Michael A. Grieco, Philip H. Mallett,
John P. Pranckevicius, Betsy Taylor

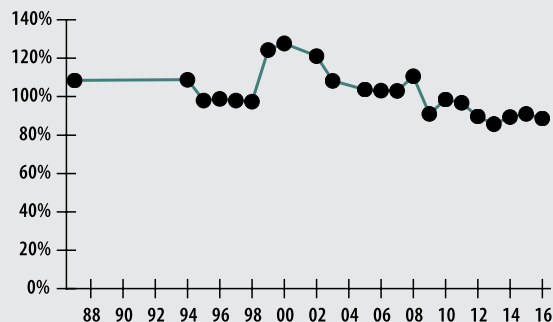
Board Administrator

Irene E. Moran

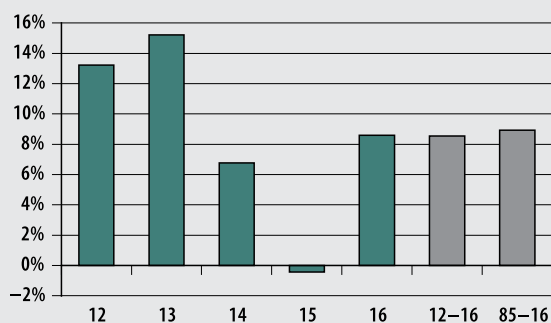
Board Meeting

Last Thursday of the month

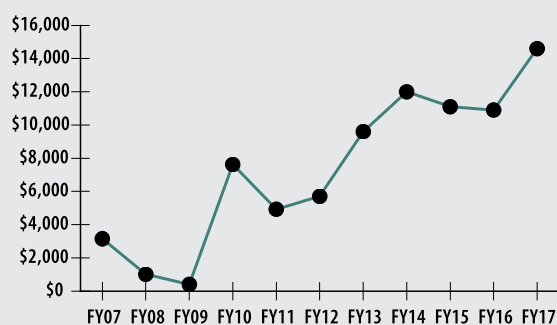
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.92%

31 years 2015
8.93%

30 years 2014
9.25%

10 years 2016
5.28%

10 years 2015
5.91%

10 years 2014
6.83%

5 years 2016
8.54%

5 years 2015
7.00%

5 years 2014
9.65%

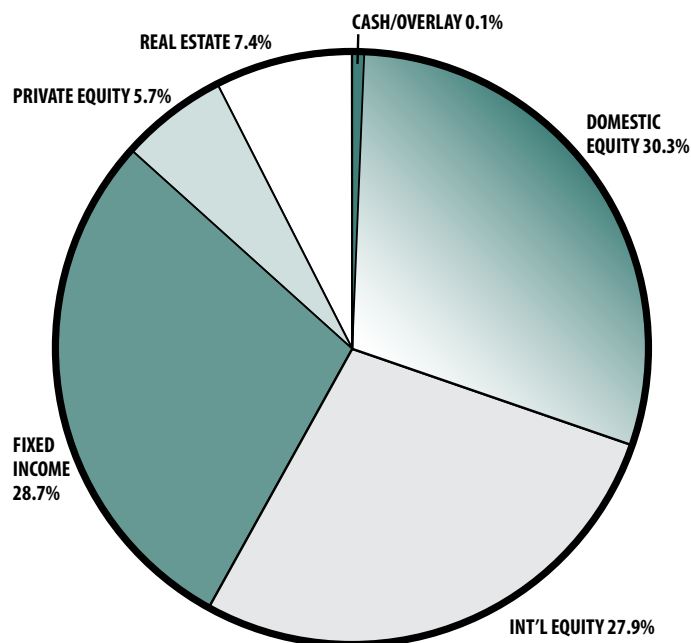
ACTUARIAL

▶ Funded Ratio	88.6%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.25%
▶ Funding Schedule	Frozen entry age*
▶ Year Fully Funded	NA
▶ Unfunded Liability	\$70.5 M
▶ Total Pension Appropriation (Fiscal 2017)	\$13.6 M

	ACTIVE	RETIRED
▶ Number of Members	1,245	749
▶ Total Payroll/Benefit	\$102.3 M	\$27.5 M
▶ Average Salary/Benefit	\$82,100	\$36,700
▶ Average Age	47	70
▶ Average Service	13.5 years	NA

*by statute

ASSET ALLOCATION (12/31/16)

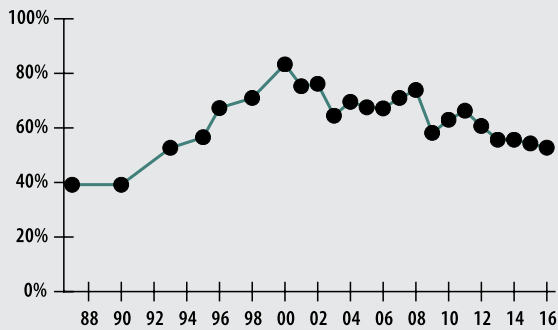


EARNED INCOME OF DISABILITY RETIREES (2015)

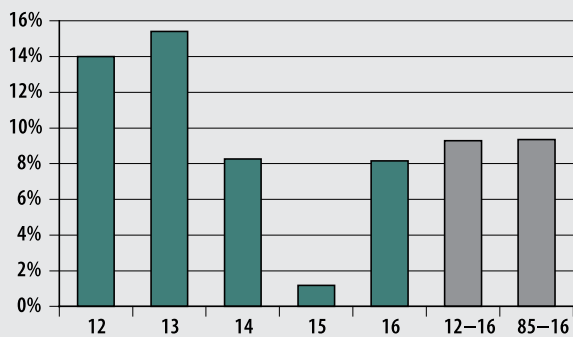
▶ Number of Disability Retirees	49
▶ Number Who Reported Earnings	14
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.60%
▶ 2016 Market Value	\$562.9M
▶ 2012-2016 (Annualized)	8.54%
▶ 1985-2016 (Annualized)	8.92%

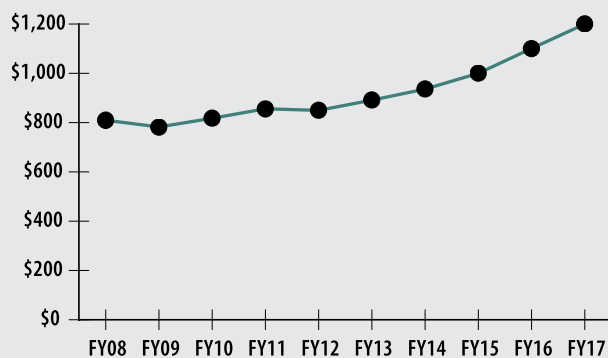
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN MILLIONS)



INVESTMENT RETURN HISTORY

32 years 2016
9.37%

31 years 2015
9.41%

30 years 2014
9.70%

10 years 2016
5.15%

10 years 2015
5.96%

10 years 2014
7.12%

5 years 2016
9.28%

5 years 2015
7.62%

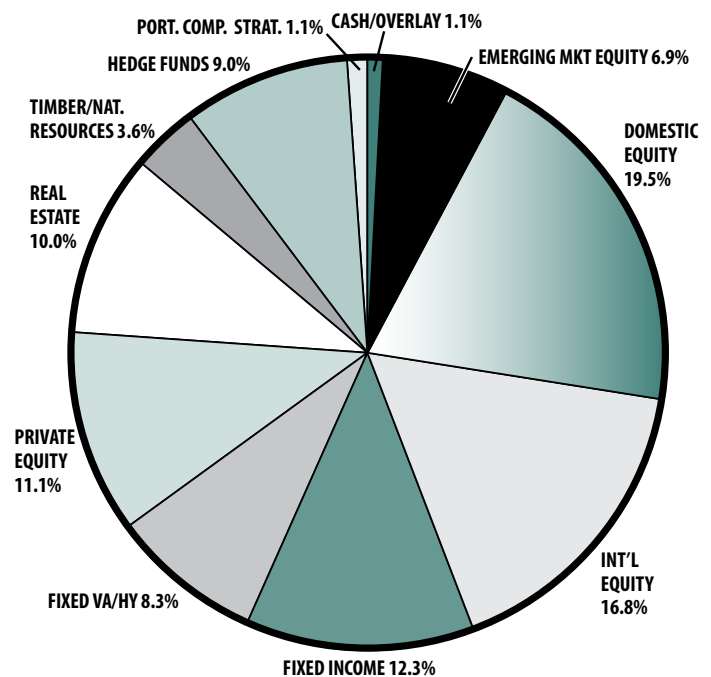
5 years 2014
10.16%

ACTUARIAL

▶ Funded Ratio	52.8%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	8.94% Total Increasing
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$22.0 B
▶ Total Pension Appropriation (Fiscal 2017)	\$1.2 B

	ACTIVE	RETIRED
▶ Number of Members	91,059	63,744
▶ Total Payroll/Benefit	\$6.4 B	\$2.7 B
▶ Average Salary/Benefit	\$70,200	\$42,900
▶ Average Age	44	72
▶ Average Service	12.9 years	NA

ASSET ALLOCATION (12/31/15)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	562
▶ Number Who Reported Earnings	118
▶ Number of Excess Earners	2
▶ Total Amount of Refund Due	\$13,452.65

▶ 2016 Return	8.16%
▶ 2016 Market Value	\$25.2B
▶ 2012-2016 (Annualized)	9.28%
▶ 1985-2016 (Annualized)	9.37%

Board Members

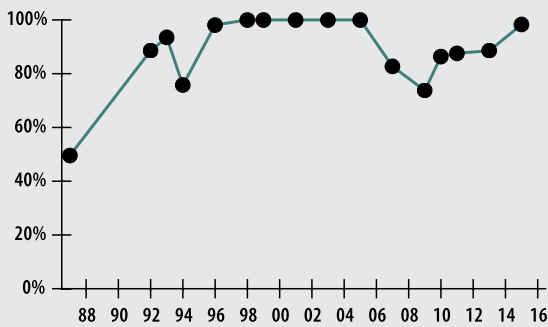
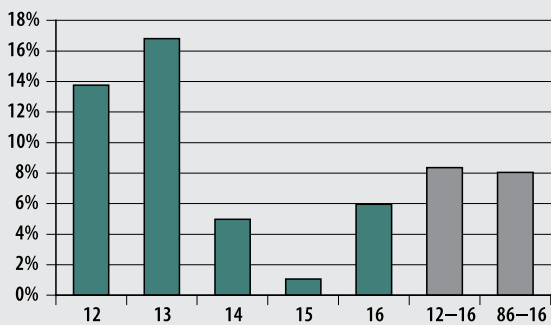
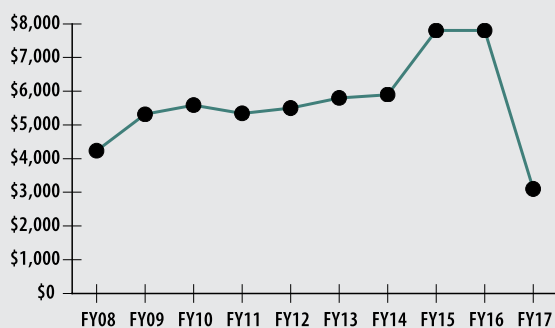
James M. Fleming, Esq. (Chairperson),
Thomas J. Durkin, Kevin McKenna,
Andrew Pappastergion, Frank J. Zecha

Board Administrator

Carolyn M. Russo

Board Meeting

Last Thursday of the month,
unless otherwise posted

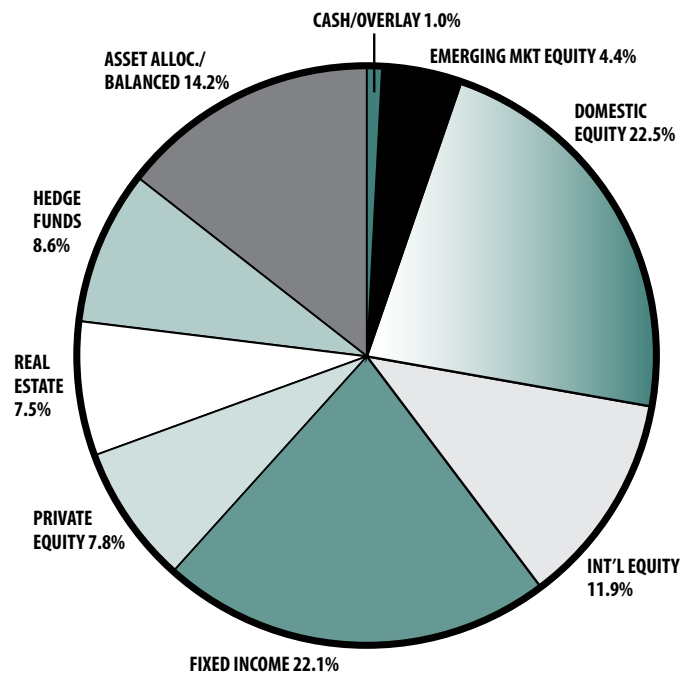
FUNDED RATIO (1987-2016)

INVESTMENT RETURN (2012-2016, 5 YEAR AND 31 YEAR AVERAGES)

10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)

INVESTMENT RETURN HISTORY

31 years 2016 8.06%	30 years 2015 8.13%	29 years 2014 8.38%
10 years 2016 5.92%	10 years 2015 6.67%	10 years 2014 7.43%
5 years 2016 8.36%	5 years 2015 7.41%	5 years 2014 9.92%

ACTUARIAL

▶ Funded Ratio	98.3%
▶ Date of Last Valuation	01/15
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.5% Increasing
▶ Year Fully Funded	2024
▶ Unfunded Liability	\$7.6 M
▶ Total Pension Appropriation (Fiscal 2017)	\$3.1 M

	ACTIVE	RETIRED
▶ Number of Members	1,090	476
▶ Total Payroll/Benefit	\$85.5 M	\$14.6 M
▶ Average Salary/Benefit	\$78,500	\$30,600
▶ Average Age	52	70
▶ Average Service	18.2 years	NA

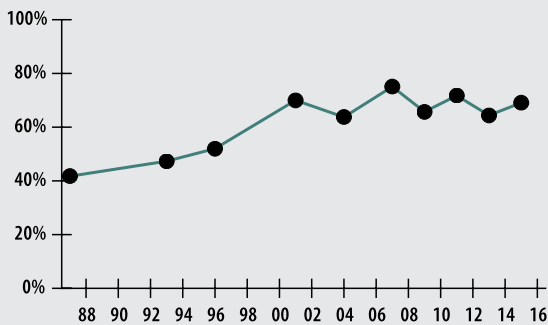
ASSET ALLOCATION (12/31/16)

EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	64
▶ Number Who Reported Earnings	15
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

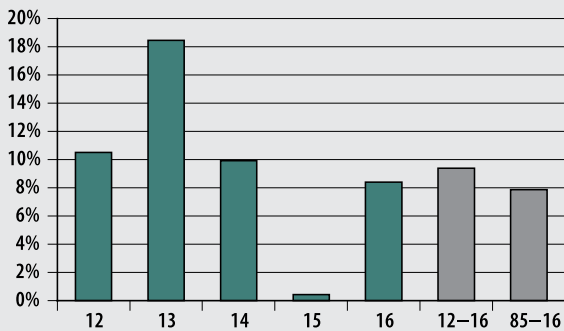
▶ 2016 Return	5.96%
▶ 2016 Market Value	\$464.5M
▶ 2012-2016 (Annualized)	8.36%
▶ 1986-2016 (Annualized)	8.06%*

*Based on 31 year return

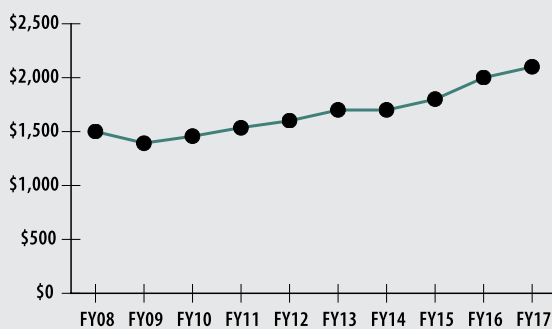
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

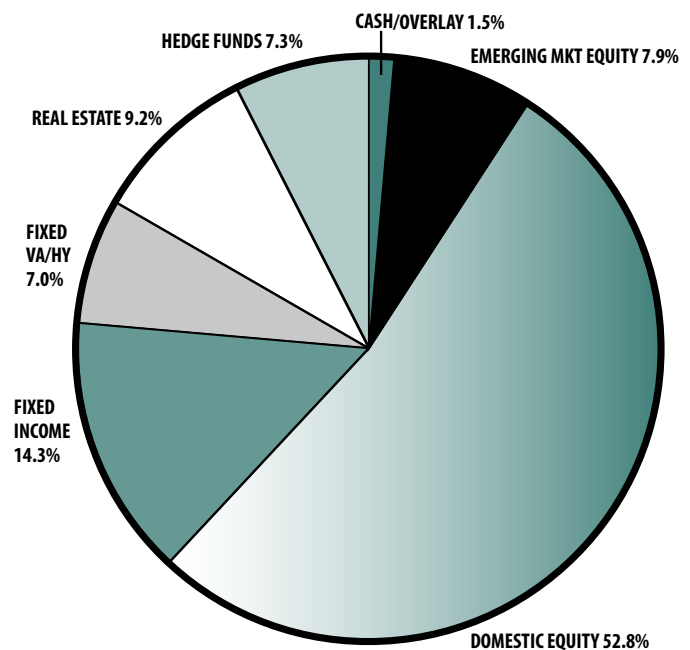
32 years 2016 7.87%	31 years 2015 7.86%	30 years 2014 8.11%
10 years 2016 5.35%	10 years 2015 5.31%	10 years 2014 6.23%
5 years 2016 9.40%	5 years 2015 8.02%	5 years 2014 10.65%

ACTUARIAL

▶ Funded Ratio	69.1%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	6.0% Total Increasing
▶ Year Fully Funded	2031
▶ Unfunded Liability	\$15.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$2.1 M

	ACTIVE	RETIRED
▶ Number of Members	208	103
▶ Total Payroll/Benefit	\$9.3 M	\$2.5 M
▶ Average Salary/Benefit	\$44,600	\$24,700
▶ Average Age	47	73
▶ Average Service	10.1 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	6
▶ Number Who Reported Earnings	4
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.41%
▶ 2016 Market Value	\$39.3M
▶ 2012-2016 (Annualized)	9.40%
▶ 1985-2016 (Annualized)	7.87%

Medford

85 George P. Hassett Drive
City Hall, Room 215
Medford, MA 02155
Phone 781-393-2517
Fax 781-393-2522

Board Members

Rick Jordan (Chairperson),
John Granara, Aleesha Nunley,
Patrick Ripley, James Vieira

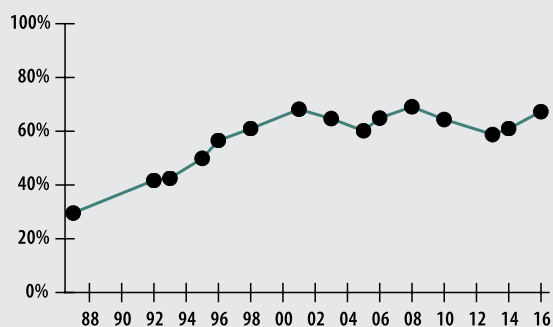
Board Administrator

Tina Rapatano

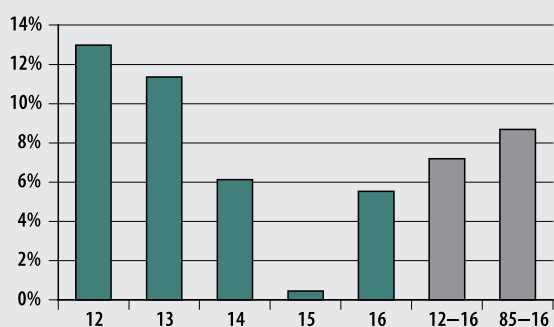
Board Meeting

Varies

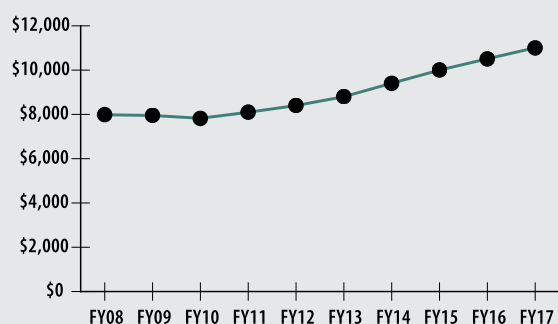
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.69%

31 years 2015
8.80%

30 years 2014
9.08%

10 years 2016
5.00%

10 years 2015
5.74%

10 years 2014
6.43%

5 years 2016
7.20%

5 years 2015
6.20%

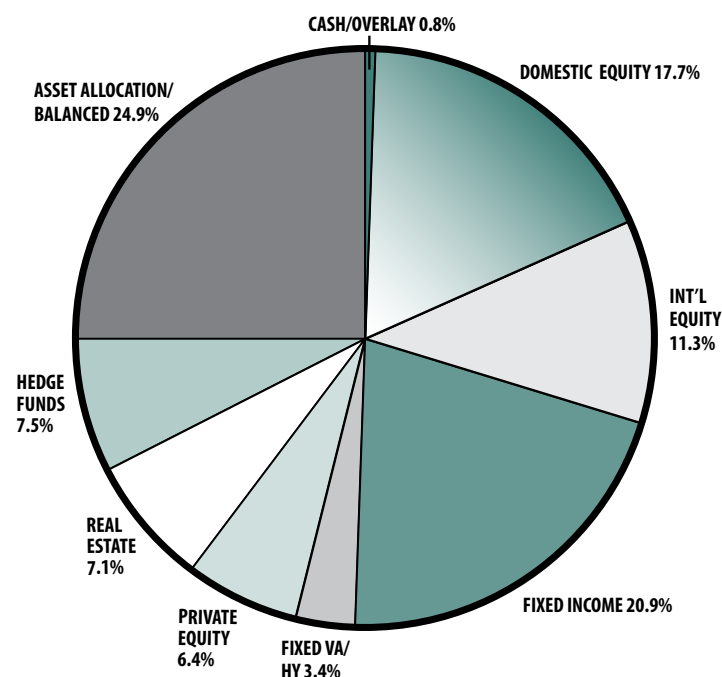
5 years 2014
8.73%

ACTUARIAL

▶ Funded Ratio	67.3%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2031
▶ Unfunded Liability	\$87.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$11.0 M

	ACTIVE	RETIRED
▶ Number of Members	729	583
▶ Total Payroll/Benefit	\$39.3 M	\$16.9 M
▶ Average Salary/Benefit	\$53,900	\$29,000
▶ Average Age	NA	76
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	91
▶ Number Who Reported Earnings	12
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$38,308.46

▶ 2016 Return	5.54%
▶ 2016 Market Value	\$180.0M
▶ 2012-2016 (Annualized)	7.20%
▶ 1985-2016 (Annualized)	8.69%

Melrose

City Hall
562 Main Street
Melrose, MA 02176
Phone 781-979-4151
Fax 781-979-4206

Board Members

Patrick D. Dello Russo (Chairperson),
Scott Colborne, Michael Lindstrom,
Michael L. Lyle, Richard E. Pitts

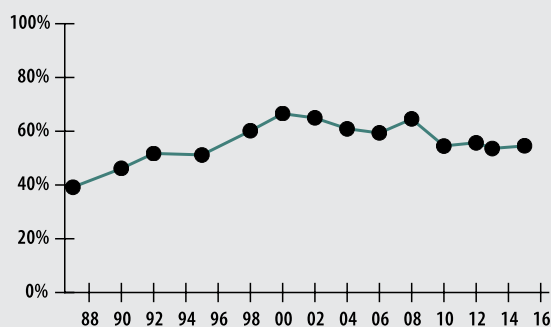
Board Director

Adam Travinski

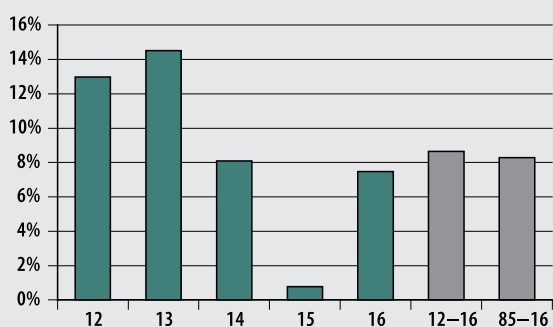
Board Meeting

Usually the last Wednesday of each month

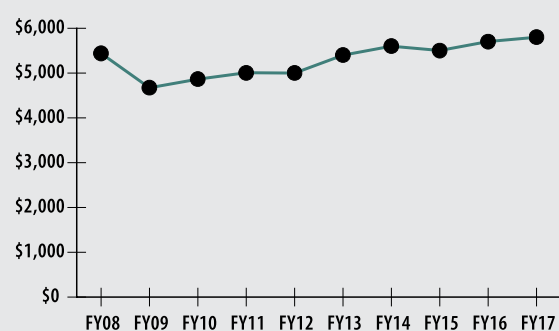
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.29%

31 years 2015
8.32%

30 years 2014
8.58%

10 years 2016
4.81%

10 years 2015
5.29%

10 years 2014
6.23%

5 years 2016
8.66%

5 years 2015
7.23%

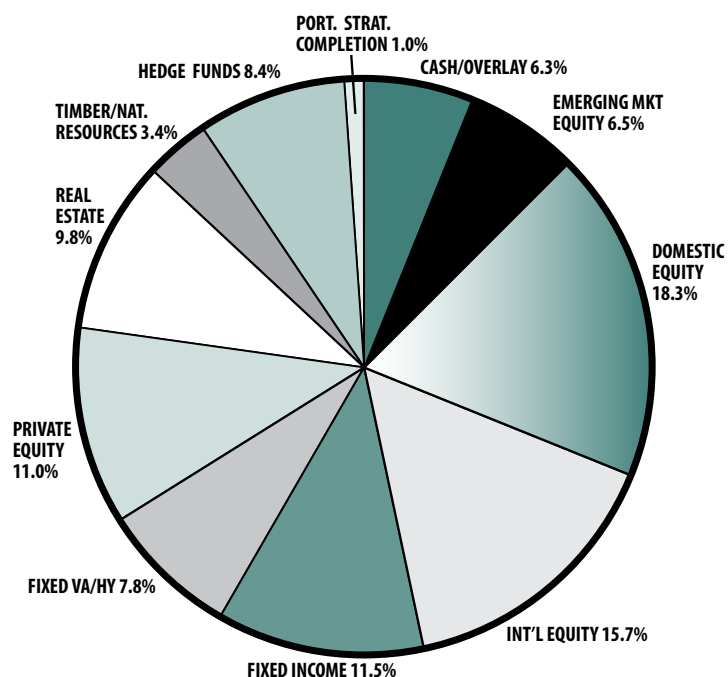
5 years 2014
9.71%

ACTUARIAL

▶ Funded Ratio	54.6%
▶ Date of Last Valuation	01/15
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.88%
▶ Funding Schedule	3.93% Increasing
▶ Year Fully Funded	2037
▶ Unfunded Liability	\$59.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.8 M

	ACTIVE	RETIRED
▶ Number of Members	432	378
▶ Total Payroll/Benefit	\$19.3 M	\$8.3 M
▶ Average Salary/Benefit	\$44,700	\$21,900
▶ Average Age	48	74
▶ Average Service	11.1 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	31
▶ Number Who Reported Earnings	10
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.47%
▶ 2016 Market Value	\$76.5M
▶ 2012-2016 (Annualized)	8.66%
▶ 1985-2016 (Annualized)	8.29%

Methuen

41 Pleasant Street
Suite 303
Methuen, MA 01844
Phone 978-983-8620
Fax 978-983-8972

Board Members

Thomas J. Kelly (Chairperson),
Michael Hennessy, Robert Sheehan,
John T. Sheehy, Albert J. Trott, III

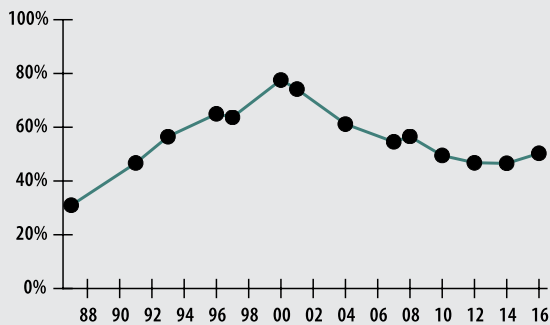
Board Administrator

Krysten Wallace

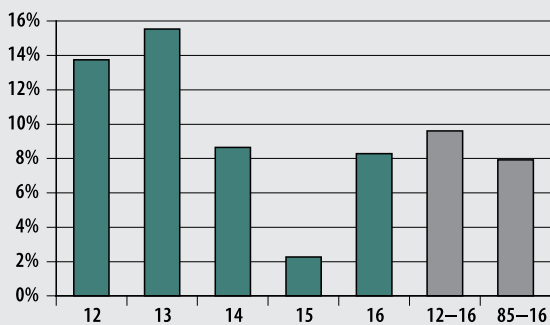
Board Meeting

Last Thursday of each month at 9:30 am

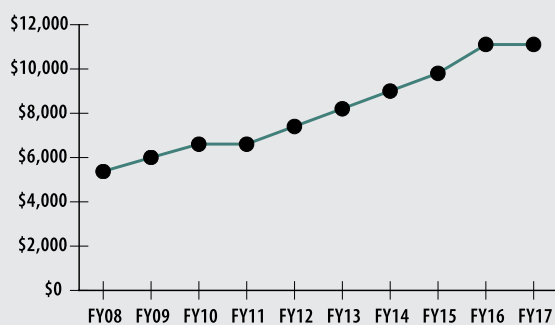
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
7.92%

31 years 2015
7.91%

30 years 2014
8.10%

10 years 2016
4.97%

10 years 2015
5.30%

10 years 2014
5.56%

5 years 2016
9.60%

5 years 2015
8.22%

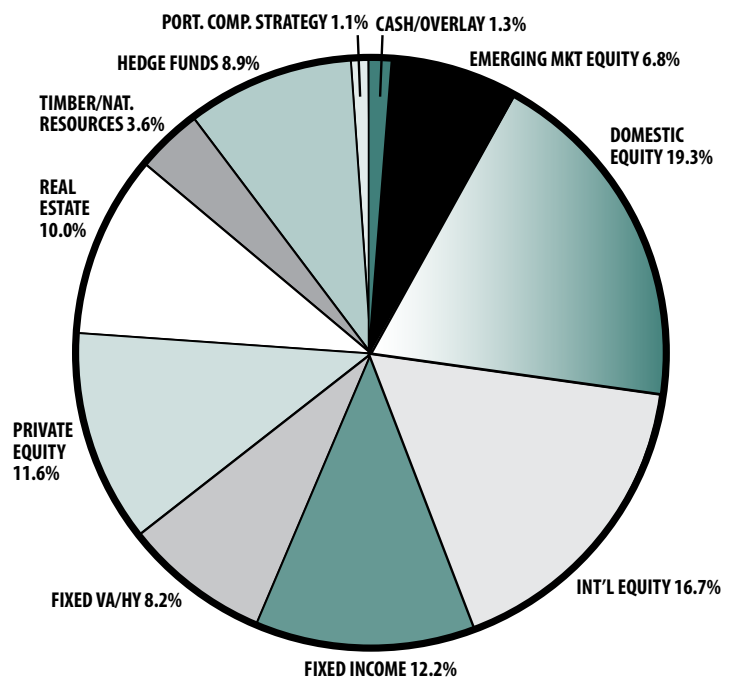
5 years 2014
10.78%

ACTUARIAL

▶ Funded Ratio	50.3%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.0% Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$118.5 M
▶ Total Pension Appropriation (Fiscal 2017)	\$11.1 M

	ACTIVE	RETIRED
▶ Number of Members	642	415
▶ Total Payroll/Benefit	\$34.5 M	\$11.7 M
▶ Average Salary/Benefit	\$53,700	\$28,300
▶ Average Age	47	72
▶ Average Service	14.3 years	NA

ASSET ALLOCATION (12/31/16)

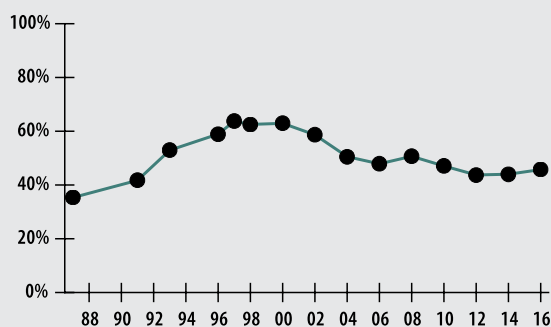


EARNED INCOME OF DISABILITY RETIREES (2015)

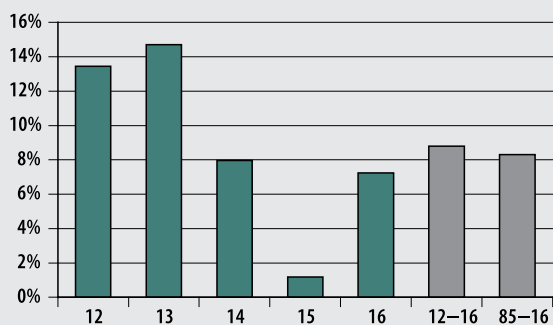
▶ Number of Disability Retirees	47
▶ Number Who Reported Earnings	16
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.28%
▶ 2016 Market Value	\$128.9M
▶ 2012-2016 (Annualized)	9.60%
▶ 1985-2016 (Annualized)	7.92%

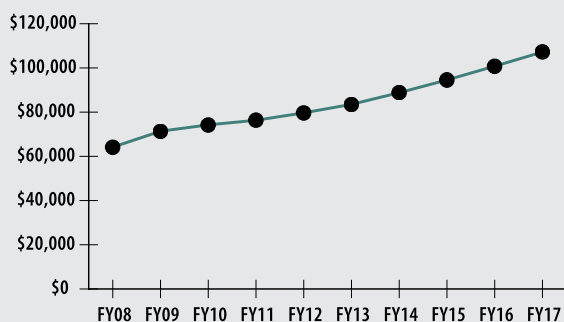
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

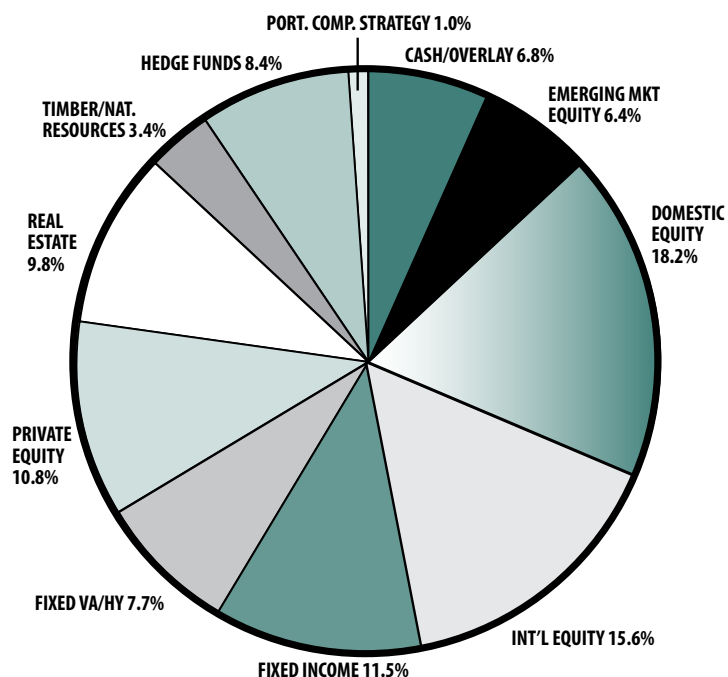
32 years 2016 8.30%	31 years 2015 8.34%	30 years 2014 8.58%
10 years 2016 5.05%	10 years 2015 5.64%	10 years 2014 6.28%
5 years 2016 8.79%	5 years 2015 7.49%	5 years 2014 9.85%

ACTUARIAL

▶ Funded Ratio	45.8%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$1.4 B
▶ Total Pension Appropriation (Fiscal 2017)	\$107.2 M

	ACTIVE	RETIRED
▶ Number of Members	9,072	5,327
▶ Total Payroll/Benefit	\$447.3 M	\$130.0 M
▶ Average Salary/Benefit	\$49,300	\$24,400
▶ Average Age	48	NA
▶ Average Service	11.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	355
▶ Number Who Reported Earnings	112
▶ Number of Excess Earners	2
▶ Total Amount of Refund Due	\$64,362.06

▶ 2016 Return	7.24%
▶ 2016 Market Value	\$1.2B
▶ 2012-2016 (Annualized)	8.79%
▶ 1985-2016 (Annualized)	8.30%

Milford

Town Hall, Room 17
52 Main Street
Milford, MA 01757
Phone 508-634-2321
Fax 508-634-0902

Board Members

Zachary A. Taylor (Chairperson),
Linda P. DeDominick, Michael A. Diorio, C.P.A.
Gerald Hennessy, Ernest Pettinari, Esq.

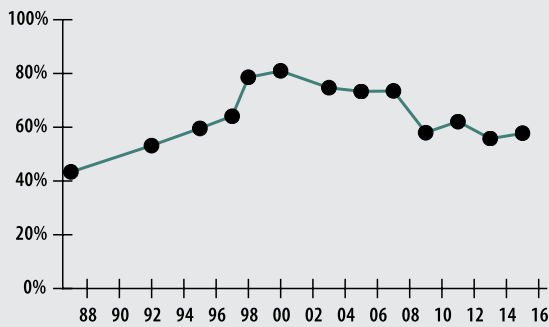
Board Administrator

Alberta J. Farley

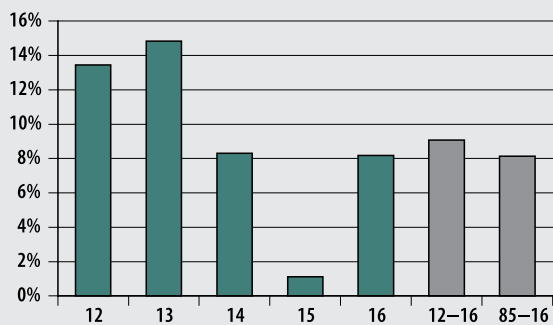
Board Meeting

Third Tuesday of each month at 1:00 pm

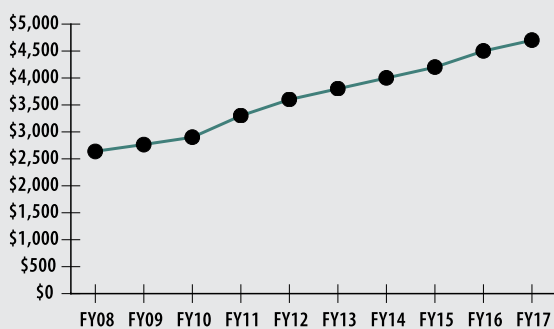
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

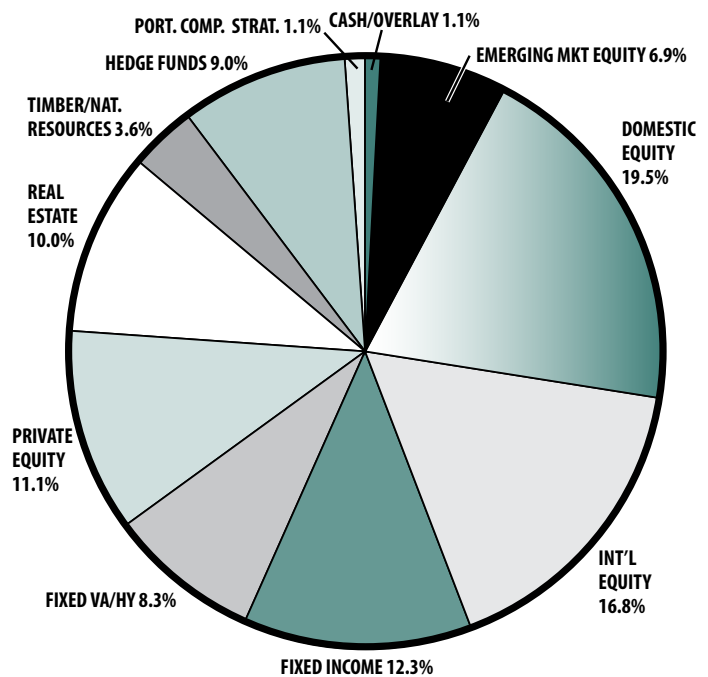
32 years 2016 8.13%	31 years 2015 8.13%	30 years 2014 8.37%
10 years 2016 4.28%	10 years 2015 4.43%	10 years 2014 5.27%
5 years 2016 9.07%	5 years 2015 7.41%	5 years 2014 9.82%

ACTUARIAL

▶ Funded Ratio	57.8%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.60%
▶ Funding Schedule	5.5% Total Increasing
▶ Year Fully Funded	2038
▶ Unfunded Liability	\$53.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$4.7 M

	ACTIVE	RETIRED
▶ Number of Members	463	293
▶ Total Payroll/Benefit	\$19.5 M	\$6.7 M
▶ Average Salary/Benefit	\$42,100	\$22,900
▶ Average Age	48	73
▶ Average Service	12.2 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	26
▶ Number Who Reported Earnings	11
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.18%
▶ 2016 Market Value	\$81.8M
▶ 2012-2016 (Annualized)	9.07%
▶ 1985-2016 (Annualized)	8.13%

Milton

525 Canton Avenue
Milton, MA 02186
Phone 617-898-4887
Fax 617-698-1540

Board Members

Kevin J. Cleary (Chairperson),
Amy Dexter, Paige A. Eppolito,
Richard J. Madigan, William H. Murphy

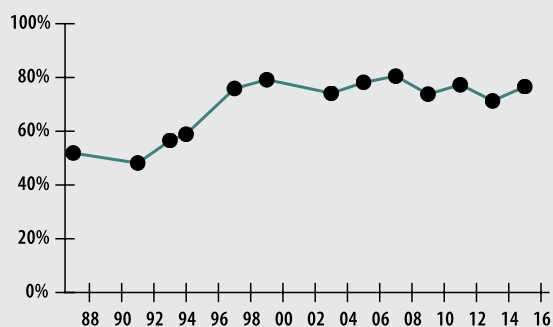
Board Administrator

Mike Pasternak

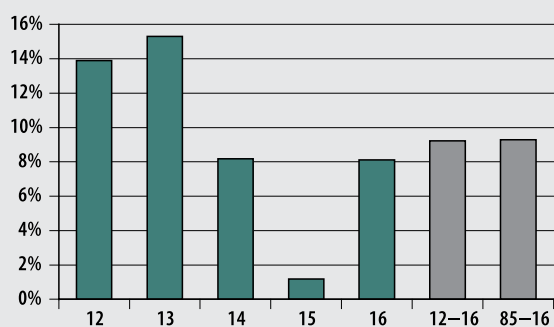
Board Meeting

Last Thursday of each month at 3:30 pm

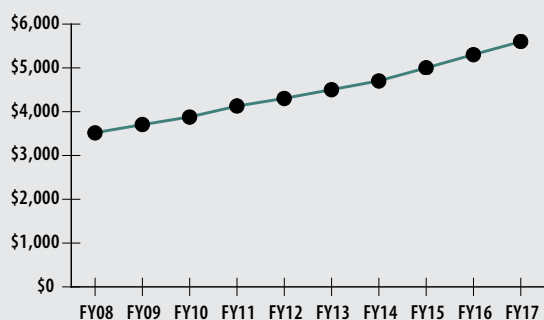
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
9.29%

31 years 2015
9.33%

30 years 2014
9.61%

10 years 2016
5.12%

10 years 2015
5.82%

10 years 2014
6.90%

5 years 2016
9.22%

5 years 2015
7.58%

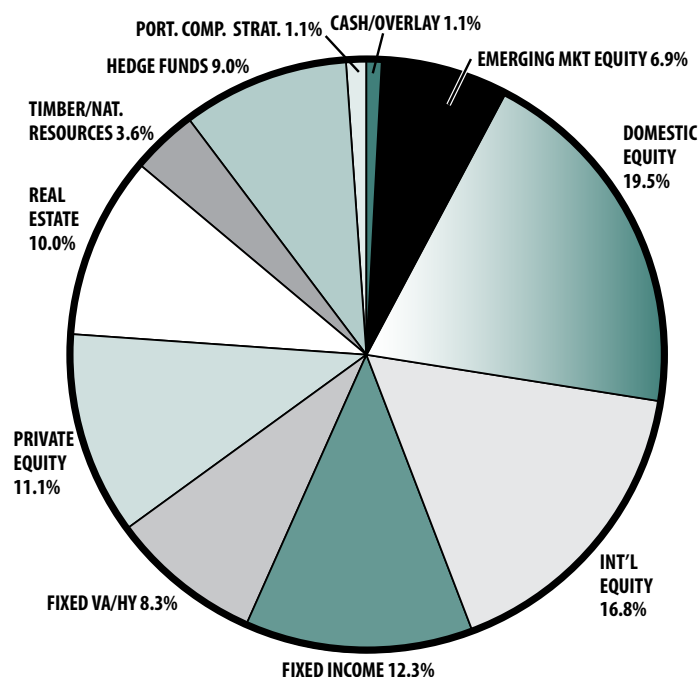
5 years 2014
10.11%

ACTUARIAL

▶ Funded Ratio	76.6%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	6.0% Total Increasing
▶ Year Fully Funded	2025
▶ Unfunded Liability	\$31.8 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.6 M

	ACTIVE	RETIRED
▶ Number of Members	361	268
▶ Total Payroll/Benefit	\$21.0 M	\$7.6 M
▶ Average Salary/Benefit	\$58,300	\$28,200
▶ Average Age	47	75
▶ Average Service	12.7 years	NA

ASSET ALLOCATION (12/31/16)

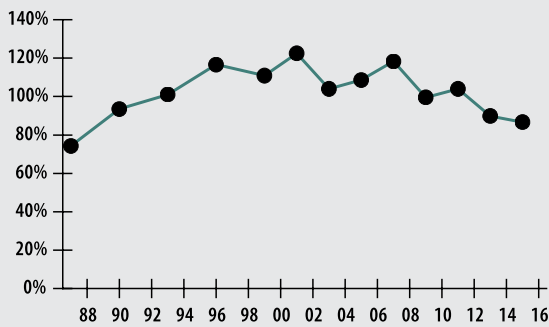


EARNED INCOME OF DISABILITY RETIREES (2015)

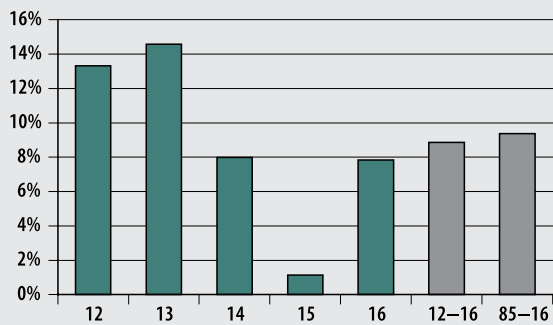
▶ Number of Disability Retirees	30
▶ Number Who Reported Earnings	7
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.12%
▶ 2016 Market Value	\$116.0M
▶ 2012-2016 (Annualized)	9.22%
▶ 1985-2016 (Annualized)	9.29%

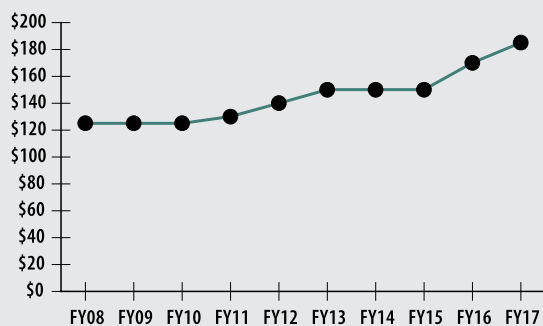
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

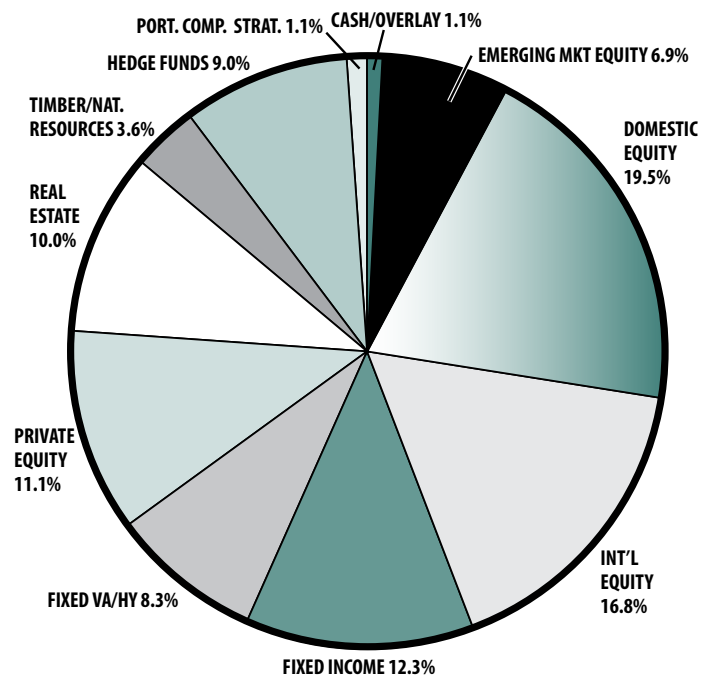
32 years 2016 9.37%	31 years 2015 9.42%	30 years 2014 9.70%
10 years 2016 4.95%	10 years 2015 5.80%	10 years 2014 6.97%
5 years 2016 8.87%	5 years 2015 7.31%	5 years 2014 9.88%

ACTUARIAL

▶ Funded Ratio	86.7%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	8.0% Total Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$1.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$185,000

	ACTIVE	RETIRED
▶ Number of Members	53	39
▶ Total Payroll/Benefit	\$2.7 M	\$894,000
▶ Average Salary/Benefit	\$51,800	\$22,900
▶ Average Age	48	74
▶ Average Service	9.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	1
▶ Number Who Reported Earnings	0
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.83%
▶ 2016 Market Value	\$12.9M
▶ 2012-2016 (Annualized)	8.87%
▶ 1985-2016 (Annualized)	9.37%

Montague

One Avenue A
Turners Falls, MA 01376
Phone 413-863-3200, Ext. 111
Fax 413-863-3224

Board Members

David R. Dion (Chairperson),
Frank Abbondanzio, Cheryl Clark,
Marianne Fiske, Carolyn S. Olsen

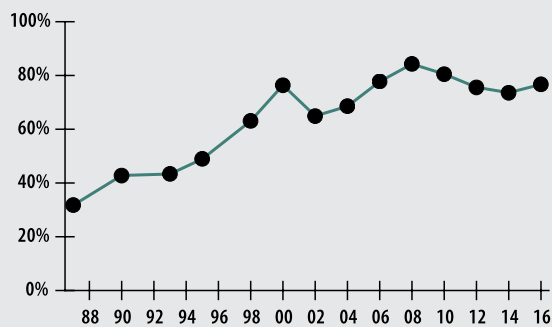
Board Administrator

Debra Underhill

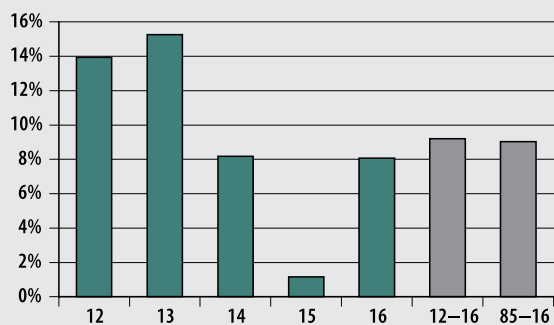
Board Meeting

Usually the fourth Tuesday of each
month at 1:00 pm

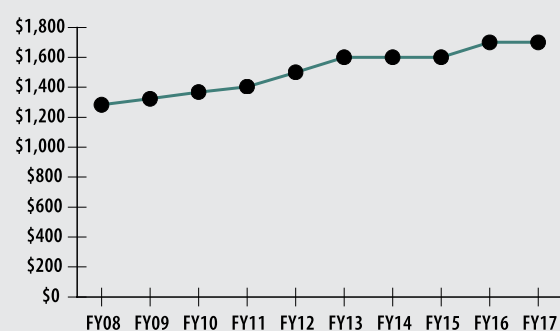
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.04%

31 years 2015

9.07%

30 years 2014

9.34%

10 years 2016

5.09%

10 years 2015

5.91%

10 years 2014

7.06%

5 years 2016

9.20%

5 years 2015

7.56%

5 years 2014

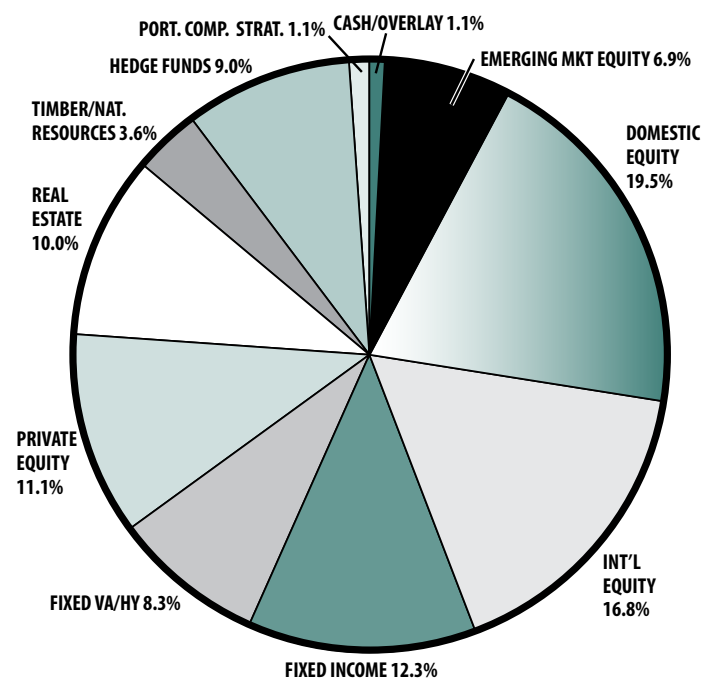
10.07%

ACTUARIAL

▶ Funded Ratio	76.7%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	3.9% Total Increasing
▶ Year Fully Funded	2030
▶ Unfunded Liability	\$10.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$1.7 M

	ACTIVE	RETIRED
▶ Number of Members	198	119
▶ Total Payroll/Benefit	\$7.0 M	\$2.3 M
▶ Average Salary/Benefit	\$35,100	\$19,100
▶ Average Age	49	72
▶ Average Service	11.7 years	NA

ASSET ALLOCATION (12/31/16)

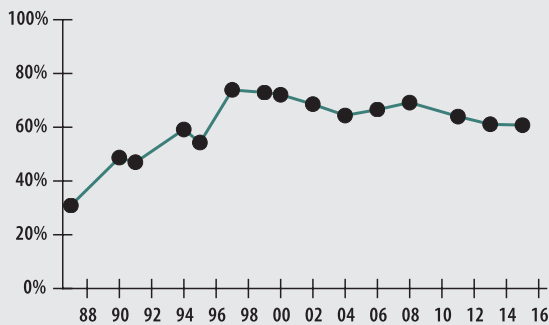


EARNED INCOME OF DISABILITY RETIREES (2015)

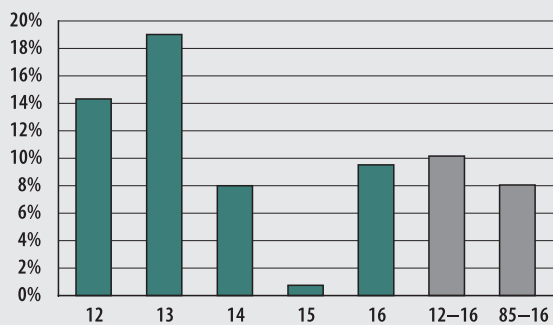
▶ Number of Disability Retirees	13
▶ Number Who Reported Earnings	1
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.07%
▶ 2016 Market Value	\$36.9M
▶ 2012-2016 (Annualized)	9.20%
▶ 1985-2016 (Annualized)	9.04%

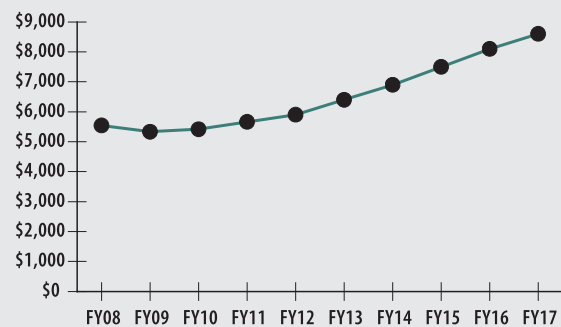
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

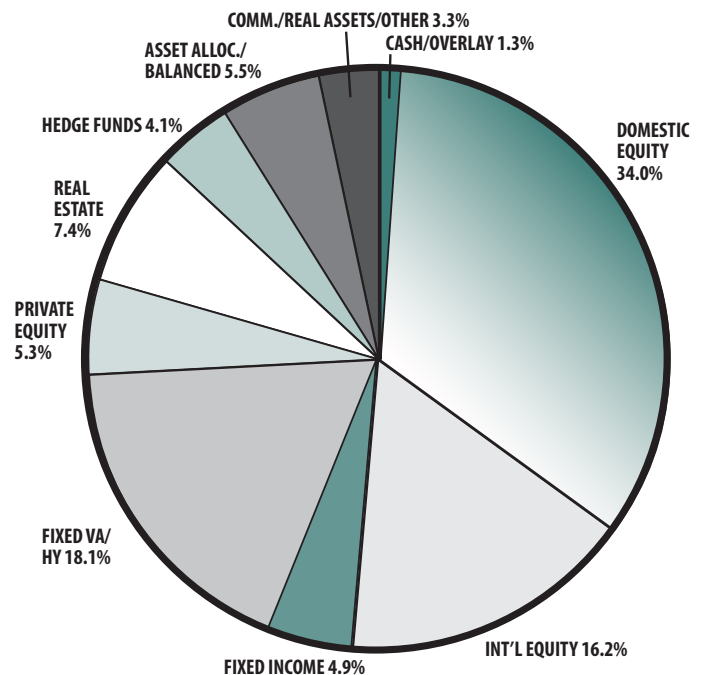
32 years 2016 8.07%	31 years 2015 8.02%	30 years 2014 8.28%
10 years 2016 5.06%	10 years 2015 5.26%	10 years 2014 5.74%
5 years 2016 10.16%	5 years 2015 8.23%	5 years 2014 10.96%

ACTUARIAL

▶ Funded Ratio	60.8%
▶ Date of Last Valuation	01/15
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2030
▶ Unfunded Liability	\$77.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$8.6 M

	ACTIVE	RETIRED
▶ Number of Members	620	383
▶ Total Payroll/Benefit	\$34.8 M	\$10.2 M
▶ Average Salary/Benefit	\$56,100	\$26,500
▶ Average Age	47	NA
▶ Average Service	11.9 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	17
▶ Number Who Reported Earnings	5
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	9.53%
▶ 2016 Market Value	\$131.6M
▶ 2012-2016 (Annualized)	10.16%
▶ 1985-2016 (Annualized)	8.07%

Needham

Town Hall
1471 Highland Avenue
Needham, MA 02492-2605
Phone 781-455-7500, Ext. 231
Fax 781-449-4569

Board Members

Evelyn M. Poness (Chairperson),
Sandra J. Cincotta, John P. Krawiecki,
Robert P. Mearls, Thomas A. Welch II

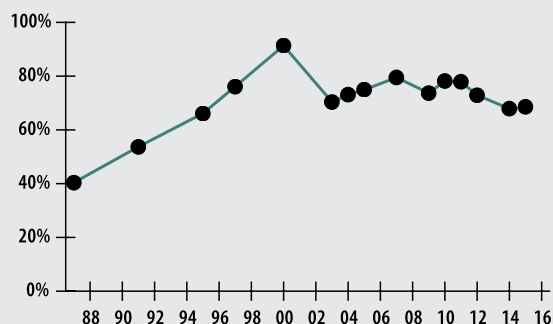
Board Administrator

Juanita Hearn

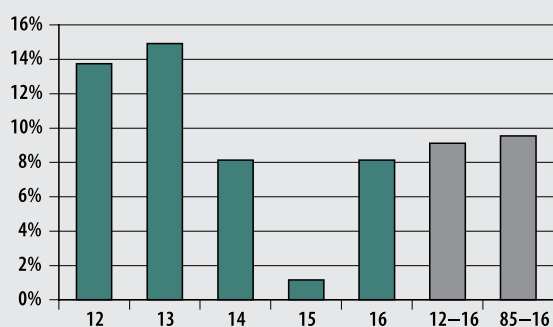
Board Meeting

Usually second Wednesday of each
month at 9:00 am

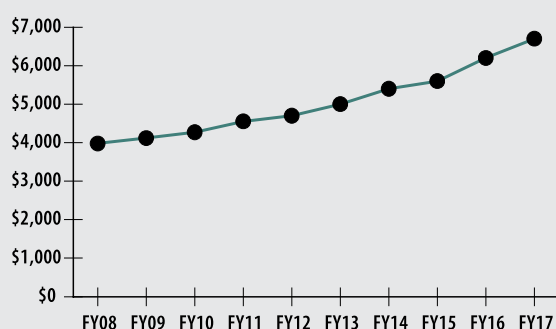
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
9.55%

31 years 2015
9.60%

30 years 2014
9.89%

10 years 2016
5.04%

10 years 2015
5.85%

10 years 2014
6.99%

5 years 2016
9.11%

5 years 2015
7.45%

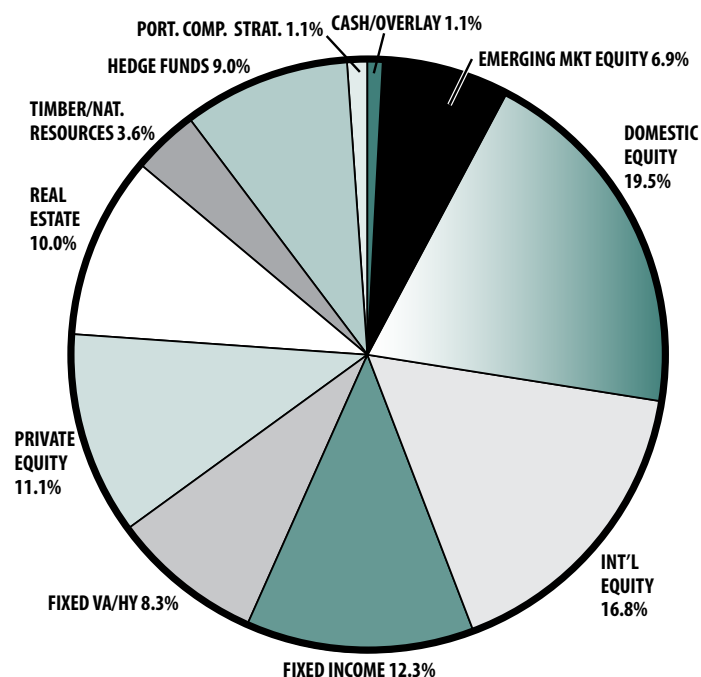
5 years 2014
9.92%

ACTUARIAL

▶ Funded Ratio	68.6%
▶ Date of Last Valuation	01/15
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.5% Increasing Phase-in
▶ Year Fully Funded	2030
▶ Unfunded Liability	\$60.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$6.7 M

	ACTIVE	RETIRED
▶ Number of Members	647	462
▶ Total Payroll/Benefit	\$33.7 M	\$10.7 M
▶ Average Salary/Benefit	\$52,100	\$23,100
▶ Average Age	48	NA
▶ Average Service	11.1 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	28
▶ Number Who Reported Earnings	7
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.14%
▶ 2016 Market Value	\$142.3M
▶ 2012-2016 (Annualized)	9.11%
▶ 1985-2016 (Annualized)	9.55%

New Bedford

651 Orchard Street, #203A
New Bedford, MA 02744
Phone 508-979-1538
Fax 508-979-1799

Board Members

James Allen (Chairperson),
Arthur J. Caron, Jr., Esq., Robert Ekstrom,
Susan Mandra Thompson,
Edward J. Wiley

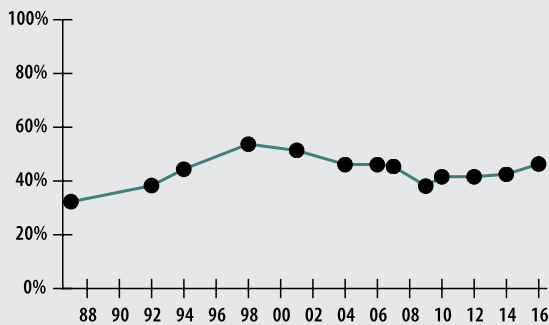
Board Administrator

Gerard Arnaudet

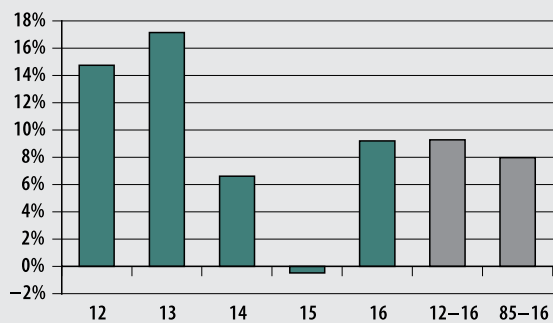
Board Meeting

Usually last Thursday of each
month at 9:00 am

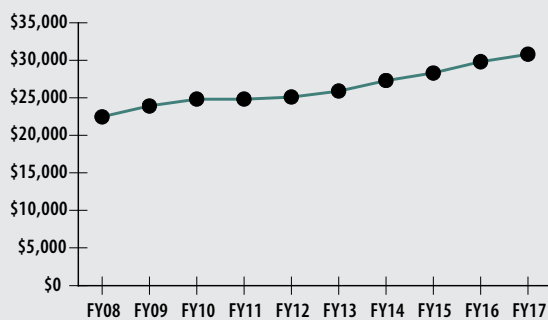
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
7.98%

31 years 2015
7.94%

30 years 2014
8.23%

10 years 2016
5.30%

10 years 2015
5.75%

10 years 2014
6.86%

5 years 2016
9.28%

5 years 2015
6.89%

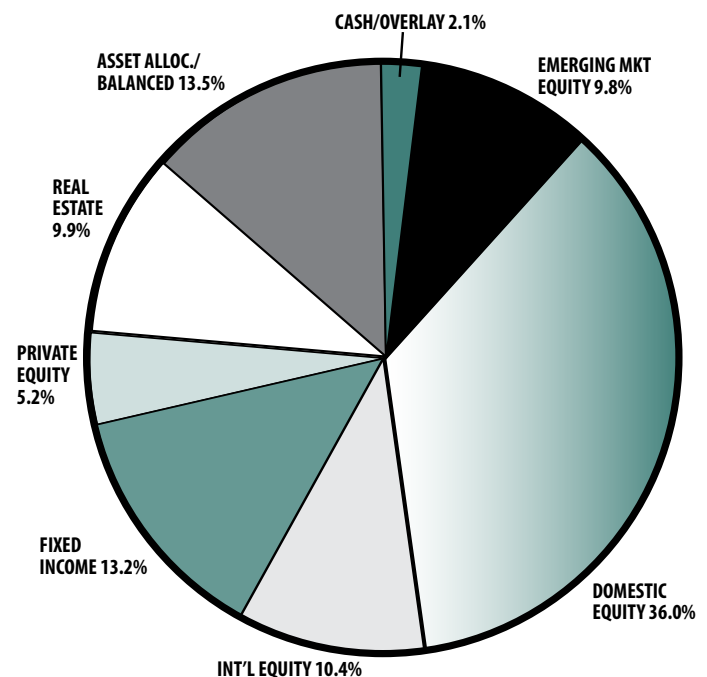
5 years 2014
9.75%

ACTUARIAL

▶ Funded Ratio	46.3%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	3.5% Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$332.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$30.8 M

	ACTIVE	RETIRED
▶ Number of Members	1,961	1,843
▶ Total Payroll/Benefit	\$89.6 M	\$43.4 M
▶ Average Salary/Benefit	\$45,700	\$23,500
▶ Average Age	NA	74
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	265
▶ Number Who Reported Earnings	77
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$857.30

▶ 2016 Return	9.21%
▶ 2016 Market Value	\$290.3M
▶ 2012-2016 (Annualized)	9.28%
▶ 1985-2016 (Annualized)	7.98%

Newburyport

16 Unicorn Street
Newburyport, MA 01950
Phone 978-465-6619
Fax 978-462-4042

Board Members

Joseph Spaulding (Chairperson),
Jeffrey R. Cutter, Alexander Kravchuk,
John Moak, Ethan R. Manning

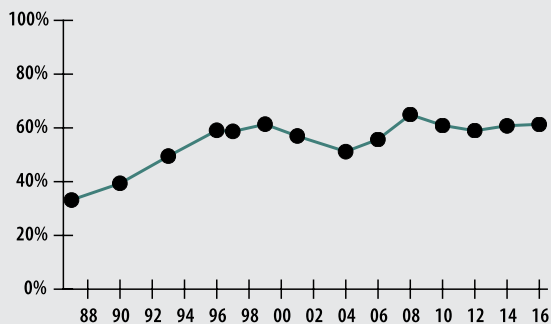
Board Administrator

Laurie Burton

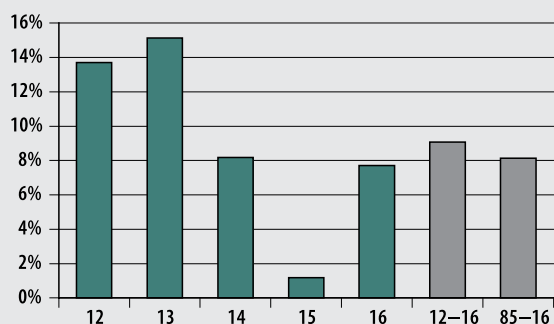
Board Meeting

Varies

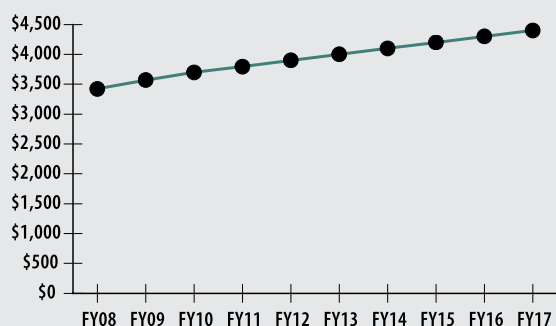
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.13%

31 years 2015

8.15%

30 years 2014

8.39%

10 years 2016

5.02%

10 years 2015

5.85%

10 years 2014

7.00%

5 years 2016

9.07%

5 years 2015

7.49%

5 years 2014

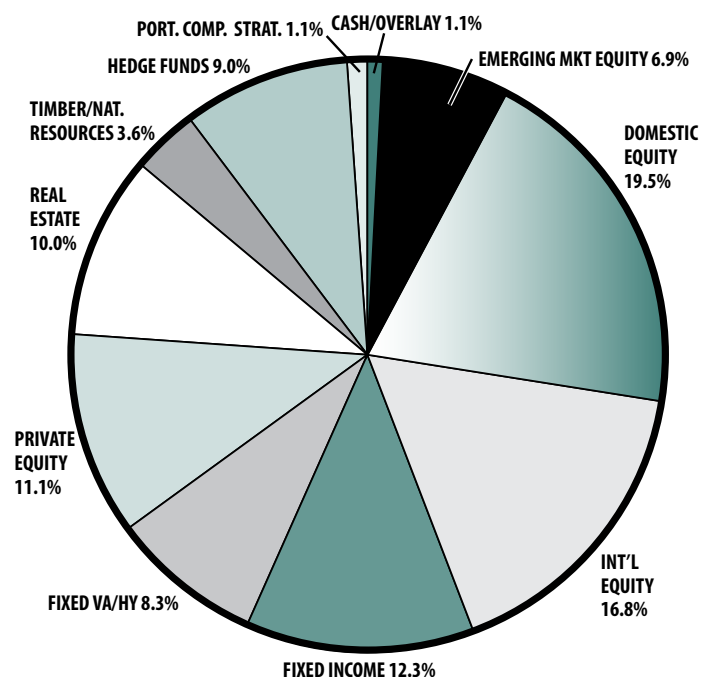
9.98%

ACTUARIAL

▶ Funded Ratio	61.3%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.0% Total Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$43.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$4.4 M

	ACTIVE	RETIRED
▶ Number of Members	353	220
▶ Total Payroll/Benefit	\$17.5 M	\$5.9 M
▶ Average Salary/Benefit	\$49,500	\$26,900
▶ Average Age	49	72
▶ Average Service	12.0 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	25
▶ Number Who Reported Earnings	9
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.72%
▶ 2016 Market Value	\$71.0M
▶ 2012-2016 (Annualized)	9.07%
▶ 1985-2016 (Annualized)	8.13%

Newton

City Hall
1000 Commonwealth Avenue
Newton Centre, MA 02459-1449
Phone 617-796-1095
Fax 617-796-1098

Board Members

Nunzio J. Piselli (Chairperson),
Paul Bianchi, Francis P. Capello, Jr.,
Susan Dzиковski, Kimberly A. Fletcher, Esq.

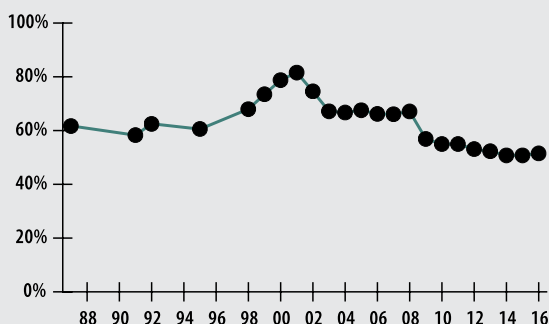
Board Administrator

Kelly Byrne

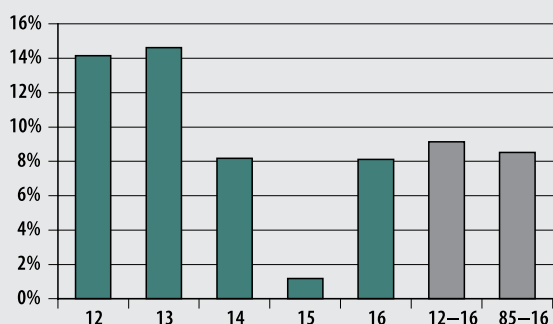
Board Meeting

Third Wednesday of the month at 3:00 pm

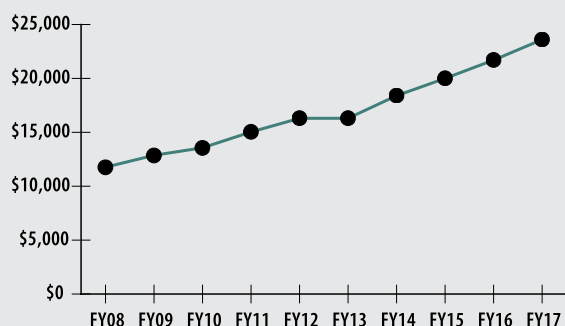
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.53%

31 years 2015
8.55%

30 years 2014
8.80%

10 years 2016
5.01%

10 years 2015
5.44%

10 years 2014
6.00%

5 years 2016
9.14%

5 years 2015
7.57%

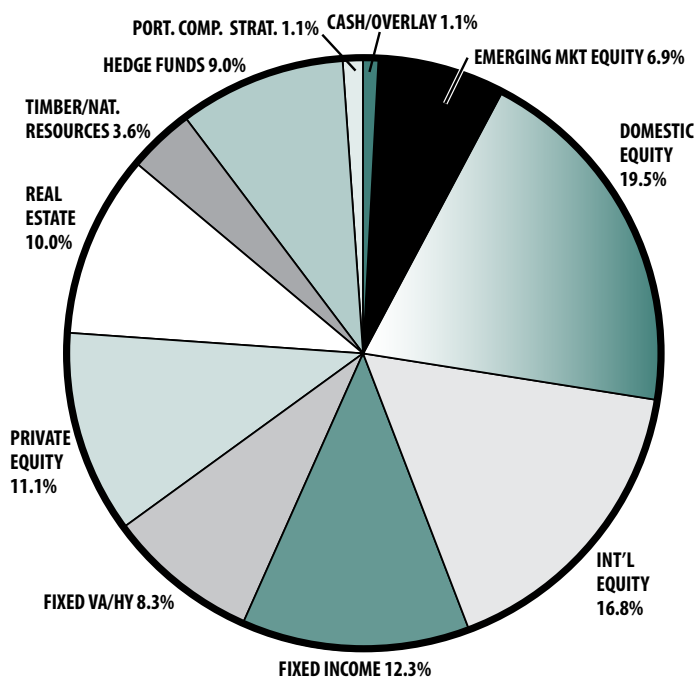
5 years 2014
9.90%

ACTUARIAL

▶ Funded Ratio	51.5%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.65%
▶ Funding Schedule	9.6% Total Increasing
▶ Year Fully Funded	2029
▶ Unfunded Liability	\$287.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$23.6 M

	ACTIVE	RETIRED
▶ Number of Members	1,732	1,305
▶ Total Payroll/Benefit	\$94.9 M	\$35.2 M
▶ Average Salary/Benefit	\$54,800	\$26,900
▶ Average Age	45	NA
▶ Average Service	11.1 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	140
▶ Number Who Reported Earnings	35
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$23,256.90

▶ 2016 Return	8.12%
▶ 2016 Market Value	\$305.6M
▶ 2012-2016 (Annualized)	9.14%
▶ 1985-2016 (Annualized)	8.53%

Board Members

James E. Timilty (Chairperson),
Paul J. Connors, Karen Jelloe, Edwin S. Little,
Josephine E. Shea

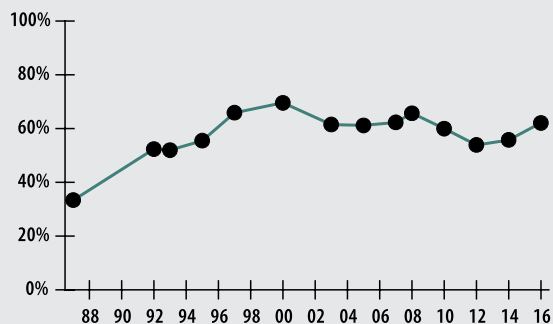
Board Administrator

Kathleen Kiely-Becchetti

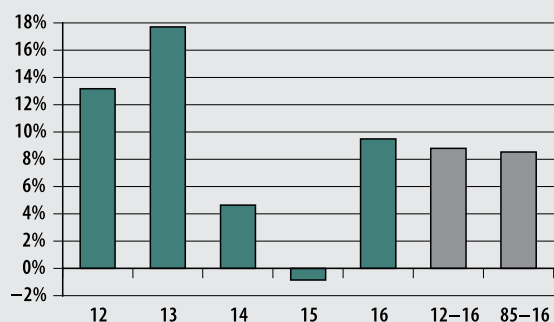
Board Meeting

Last Wednesday of each month

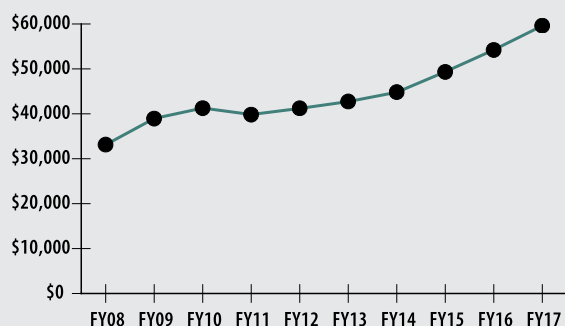
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.55%

31 years 2015
8.52%

30 years 2014
8.85%

10 years 2016
5.18%

10 years 2015
5.62%

10 years 2014
6.40%

5 years 2016
8.82%

5 years 2015
7.11%

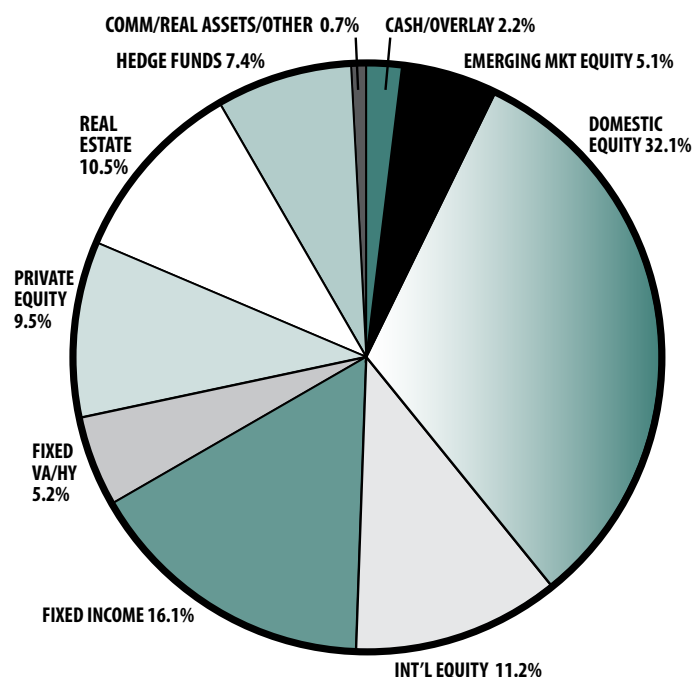
5 years 2014
10.11%

ACTUARIAL

▶ Funded Ratio	62.1%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	8.00%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2029
▶ Unfunded Liability	\$496.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$59.6 M

	ACTIVE	RETIRED
▶ Number of Members	5,278	3,184
▶ Total Payroll/Benefit	\$267.5 M	\$78.9 M
▶ Average Salary/Benefit	\$50,700	\$24,800
▶ Average Age	NA	73
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	290
▶ Number Who Reported Earnings	92
▶ Number of Excess Earners	2
▶ Total Amount of Refund Due	\$11,663.76

▶ 2016 Return	9.50%
▶ 2016 Market Value	\$829.8M
▶ 2012-2016 (Annualized)	8.82%
▶ 1985-2016 (Annualized)	8.55%

North Adams

61 Main Street, Room 247
North Adams, MA 01247
Phone 413-663-5185
Fax 413-664-9412

Board Members

Lawrence R. O'Brien (Chairperson),
Matthew LaBonte, Alan Marden,
Fred T. Thompson, Esq., Kathleen A. Wall

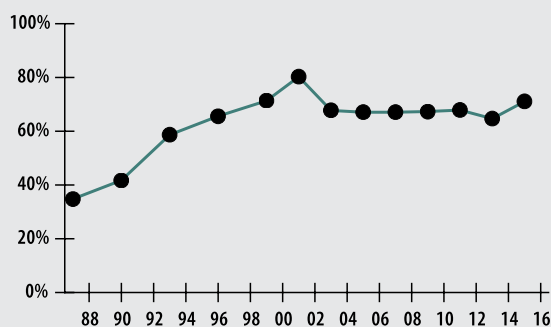
Board Administrator

Beth Matson

Board Meeting

Varies

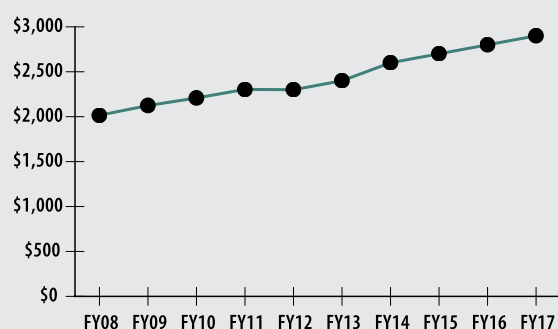
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.31%

31 years 2015

9.62%

30 years 2014

9.98%

10 years 2016

6.51%

10 years 2015

7.43%

10 years 2014

8.74%

5 years 2016

8.13%

5 years 2015

8.93%

5 years 2014

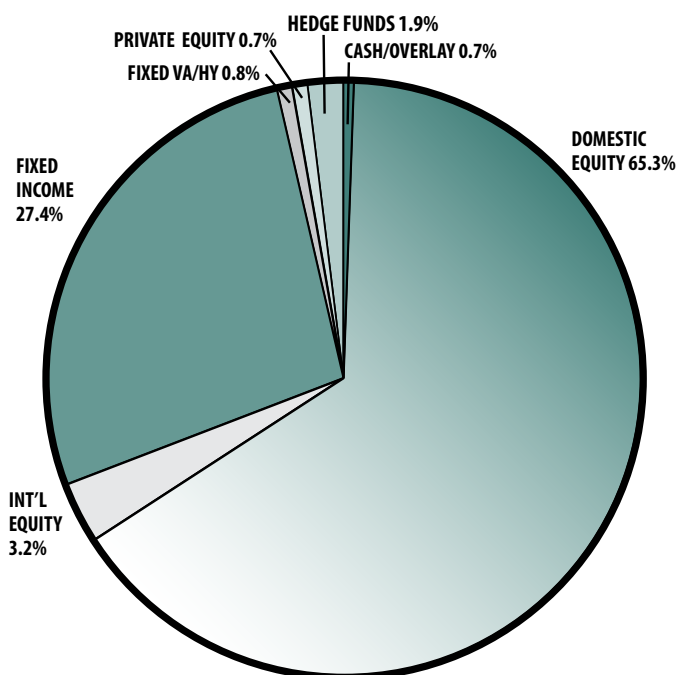
11.82%

ACTUARIAL

▶ Funded Ratio	71.1%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	4.32% Total Increasing
▶ Year Fully Funded	2029
▶ Unfunded Liability	\$20.8 M
▶ Total Pension Appropriation (Fiscal 2017)	\$2.9 M

	ACTIVE	RETIRED
▶ Number of Members	334	217
▶ Total Payroll/Benefit	\$10.4 M	\$4.1 M
▶ Average Salary/Benefit	\$31,000	\$18,800
▶ Average Age	48	74
▶ Average Service	11.6 years	NA

ASSET ALLOCATION (12/31/16)

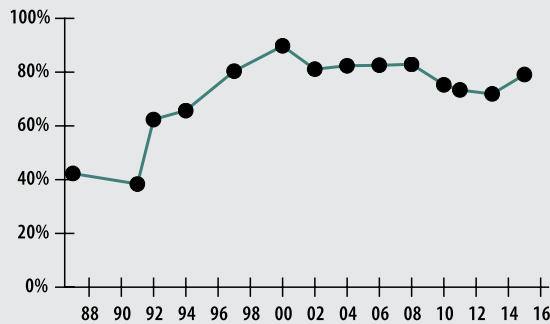


EARNED INCOME OF DISABILITY RETIREES (2015)

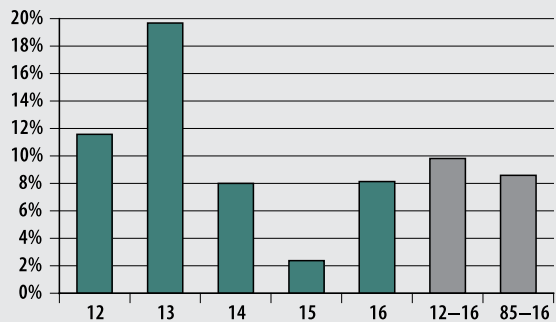
▶ Number of Disability Retirees	29
▶ Number Who Reported Earnings	10
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$311.95

▶ 2016 Return	.09%
▶ 2016 Market Value	\$53.9M
▶ 2012-2016 (Annualized)	8.13%
▶ 1985-2016 (Annualized)	9.31%

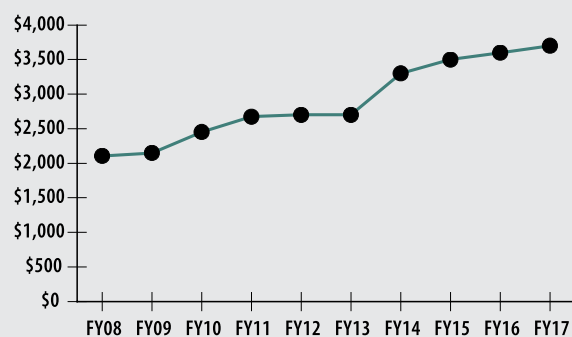
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

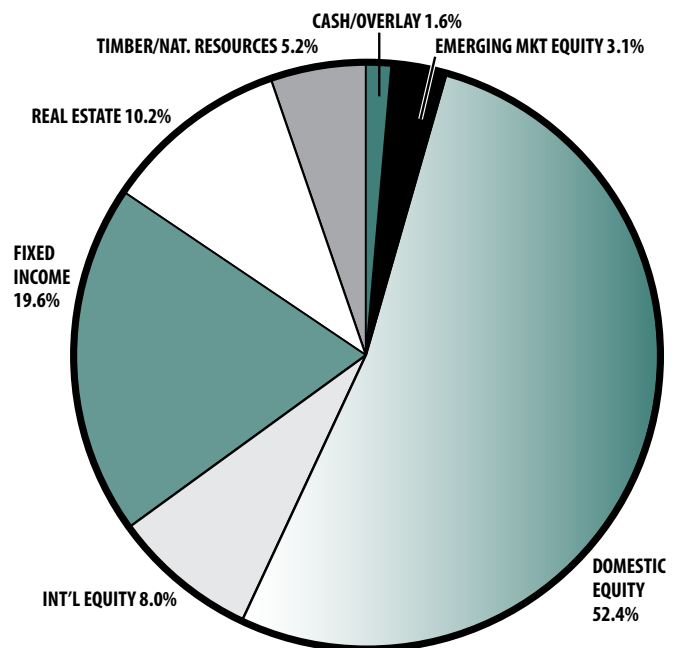
32 years 2016 8.59%	31 years 2015 8.60%	30 years 2014 8.81%
10 years 2016 5.98%	10 years 2015 6.37%	10 years 2014 6.59%
5 years 2016 9.82%	5 years 2015 8.74%	5 years 2014 11.15%

ACTUARIAL

▶ Funded Ratio	79.1%
▶ Date of Last Valuation	01/15
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	8.00%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$23.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$3.7 M

	ACTIVE	RETIRED
▶ Number of Members	479	247
▶ Total Payroll/Benefit	\$22.7 M	\$5.4 M
▶ Average Salary/Benefit	\$47,400	\$21,900
▶ Average Age	NA	70
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	21
▶ Number Who Reported Earnings	9
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.14%
▶ 2016 Market Value	\$102.8M
▶ 2012-2016 (Annualized)	9.82%
▶ 1985-2016 (Annualized)	8.59%

Northampton

240 Main Street, First Floor
Northampton, MA 01060
Phone 413-587-1211
Fax 413-587-1278

Board Members

Joyce Karpinski (Chairperson),
Shirley A. LaRose, Michael J. Lyons,
Thomas F. Sullivan, Susan L. Wright

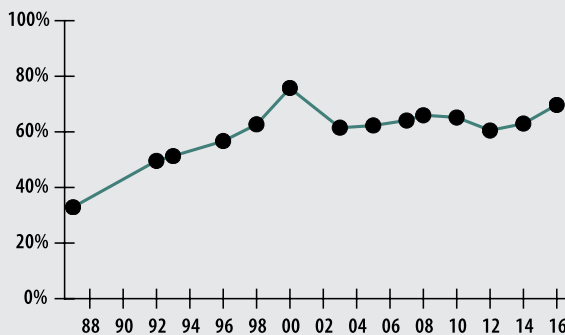
Board Administrator

David Shipka

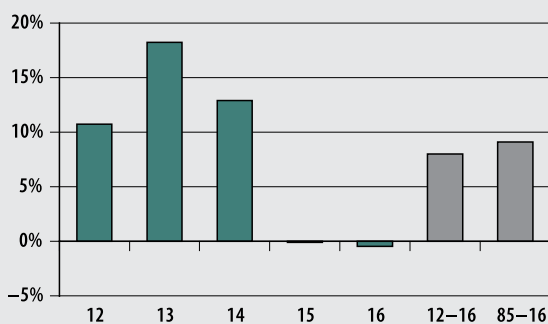
Board Meeting

Last Tuesday or Thursday of each month

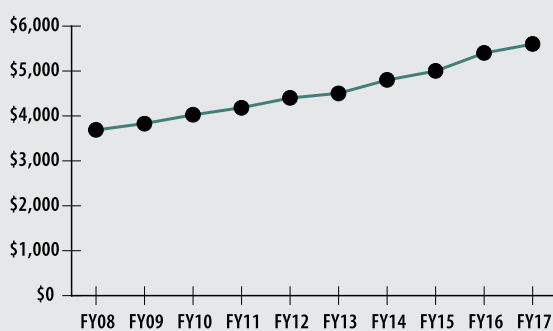
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.11%

31 years 2015

9.44%

30 years 2014

9.77%

10 years 2016

6.48%

10 years 2015

7.48%

10 years 2014

8.58%

5 years 2016

8.01%

5 years 2015

8.88%

5 years 2014

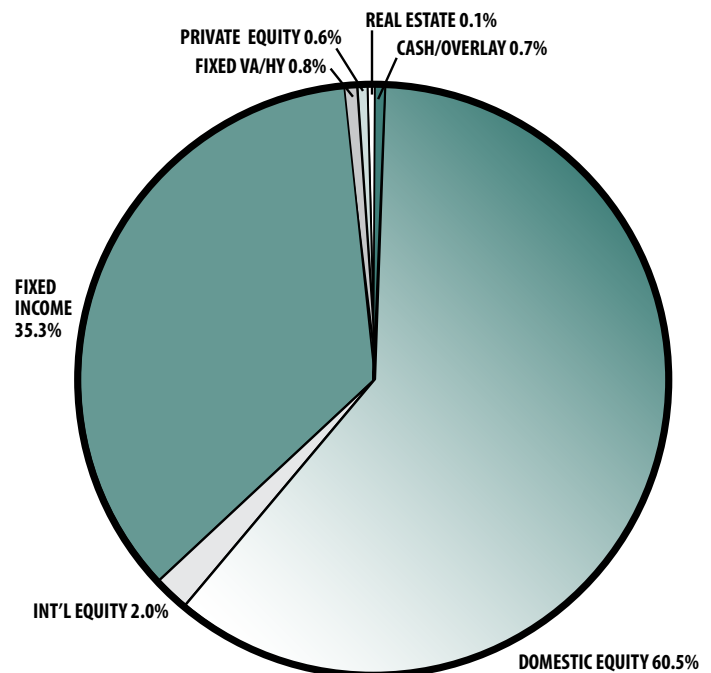
11.57%

ACTUARIAL

▶ Funded Ratio	69.7%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	3.65% Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$48.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.6 M

	ACTIVE	RETIRED
▶ Number of Members	633	403
▶ Total Payroll/Benefit	\$26.2 M	\$9.2 M
▶ Average Salary/Benefit	\$41,500	\$22,900
▶ Average Age	46	71
▶ Average Service	10.8 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	33
▶ Number Who Reported Earnings	15
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	-.46%
▶ 2016 Market Value	\$106.5M
▶ 2012-2016 (Annualized)	8.01%
▶ 1985-2016 (Annualized)	9.11%

Northbridge

Town Hall
7 Main Street
Whitinsville, MA 01588
Phone 508-234-0820
Fax 508-234-5834

Board Members

John Meagher (Chairperson),
Thomas S. Frieswyk, Sharon Susienka,
Neil Vaidya

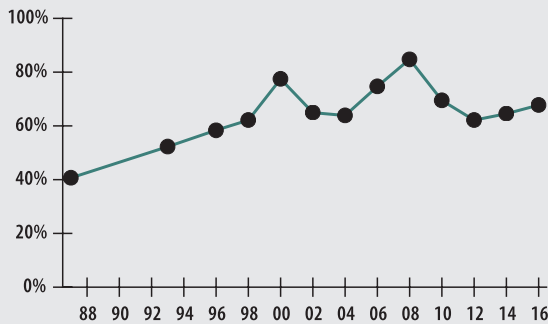
Board Administrator

Scott McGrath

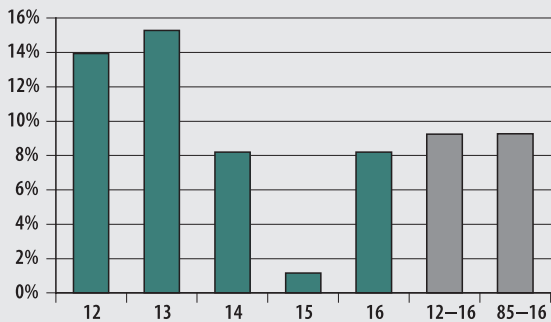
Board Meeting

Third Wednesday of each month

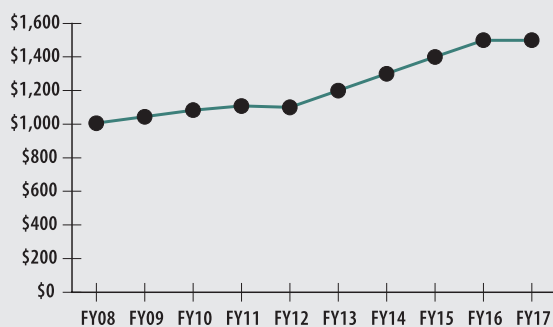
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.26%

31 years 2015

9.29%

30 years 2014

9.58%

10 years 2016

5.15%

10 years 2015

5.95%

10 years 2014

7.10%

5 years 2016

9.25%

5 years 2015

7.61%

5 years 2014

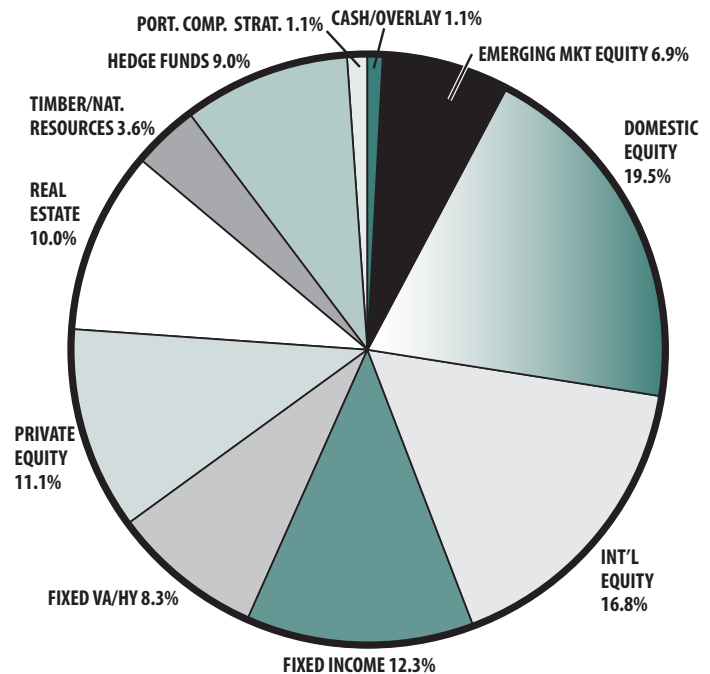
10.17%

ACTUARIAL

▶ Funded Ratio	67.8%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$14.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$1.5 M

	ACTIVE	RETIRED
▶ Number of Members	210	116
▶ Total Payroll/Benefit	\$8.5 M	\$2.3 M
▶ Average Salary/Benefit	\$40,500	\$19,800
▶ Average Age	47	74
▶ Average Service	10.0 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	9
▶ Number Who Reported Earnings	3
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.21%
▶ 2016 Market Value	\$31.0M
▶ 2012-2016 (Annualized)	9.25%
▶ 1985-2016 (Annualized)	9.26%

Norwood

566 Washington Street
Norwood, MA 02062
Phone 781-762-1240, Ext. 157
Fax 781-278-3024

Board Members

Ted Mulvehill, Jr., (Chairperson),
Eileen Hickey, Thomas J. McQuaid,
Thomas O'Toole, Thomas A. Rorrie

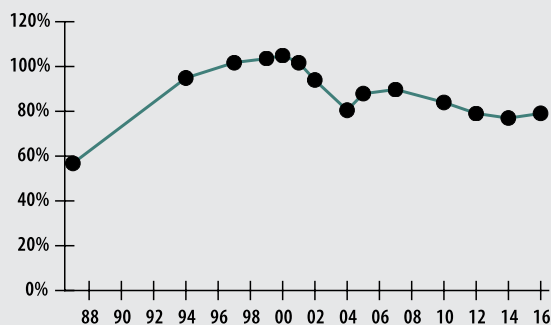
Board Administrator

Debra A. Wilkes

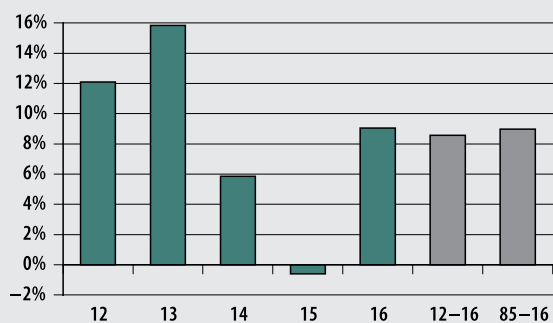
Board Meeting

Third Thursday of each month

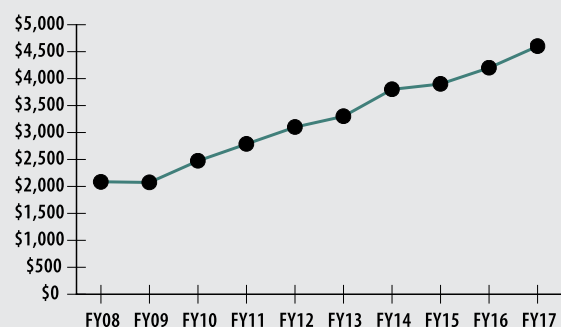
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.99%

31 years 2015

8.99%

30 years 2014

9.28%

10 years 2016

6.00%

10 years 2015

6.28%

10 years 2014

7.08%

5 years 2016

8.57%

5 years 2015

6.85%

5 years 2014

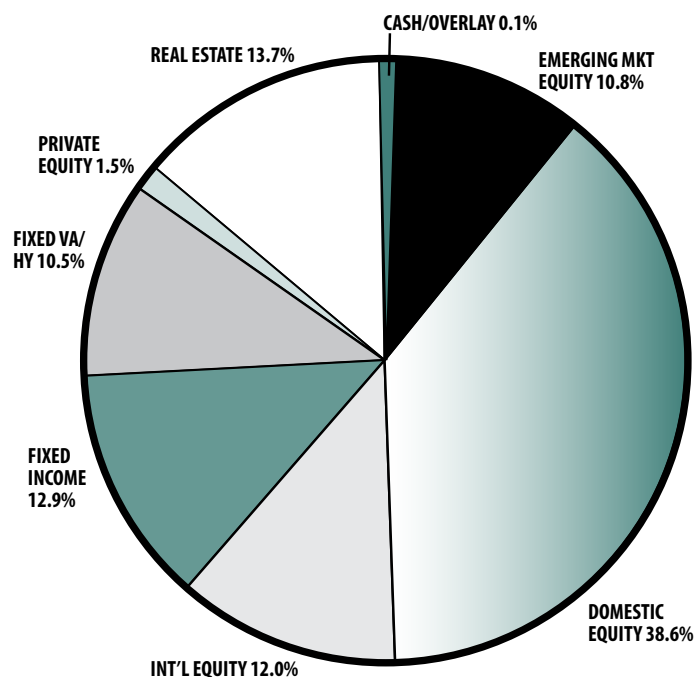
8.97%

ACTUARIAL

▶ Funded Ratio	79.1%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.5% Increasing
▶ Year Fully Funded	2028
▶ Unfunded Liability	\$37.5 M
▶ Total Pension Appropriation (Fiscal 2017)	\$4.6 M

	ACTIVE	RETIRED
▶ Number of Members	561	366
▶ Total Payroll/Benefit	\$29.8 M	\$10.4 M
▶ Average Salary/Benefit	\$53,100	\$28,300
▶ Average Age	NA	74
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	35
▶ Number Who Reported Earnings	15
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$8,129.98

▶ 2016 Return	9.06%
▶ 2016 Market Value	\$143.1M
▶ 2012-2016 (Annualized)	8.57%
▶ 1985-2016 (Annualized)	8.99%

Peabody

City Hall
24 Lowell Street
Peabody, MA 01960
Phone 978-538-5911
Fax 978-538-5989

Board Members

Richard A. Yagjian (Chairperson),
Linda Cavallon, Joseph DiFranco, Sr.,
Michael J. Gingras, Edward J. Lomasney III

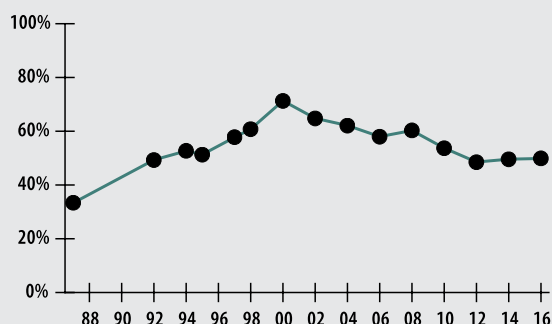
Board Administrator

James Freeman

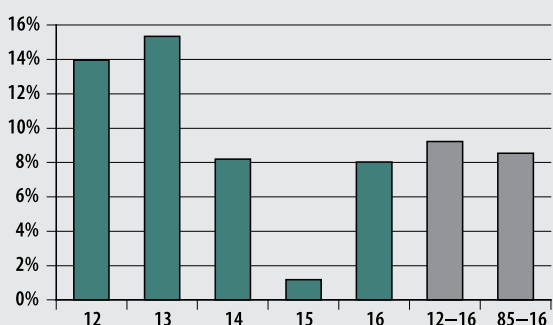
Board Meeting

Varies

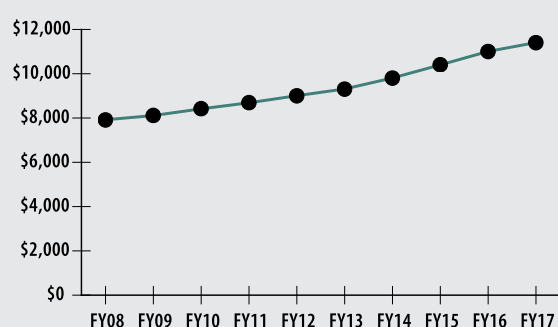
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.54%

31 years 2015
8.56%

30 years 2014
8.81%

10 years 2016
5.00%

10 years 2015
5.31%

10 years 2014
5.79%

5 years 2016
9.23%

5 years 2015
7.59%

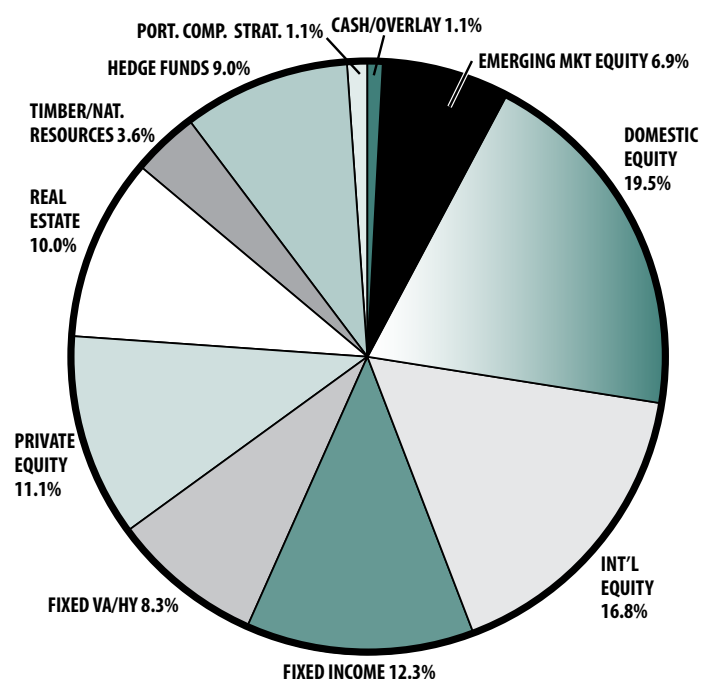
5 years 2014
10.13%

ACTUARIAL

▶ Funded Ratio	49.9%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$136.8 M
▶ Total Pension Appropriation (Fiscal 2017)	\$11.4 M

	ACTIVE	RETIRED
▶ Number of Members	825	775
▶ Total Payroll/Benefit	\$42.6 M	\$17.7 M
▶ Average Salary/Benefit	\$51,700	\$22,900
▶ Average Age	NA	76
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)

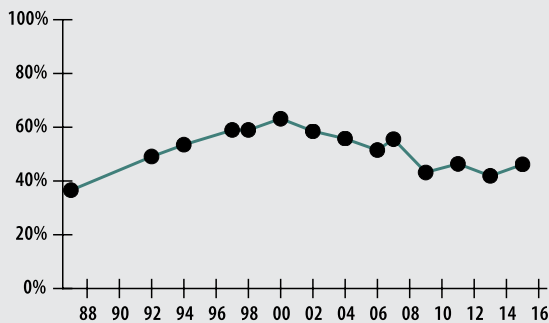


EARNED INCOME OF DISABILITY RETIREES (2015)

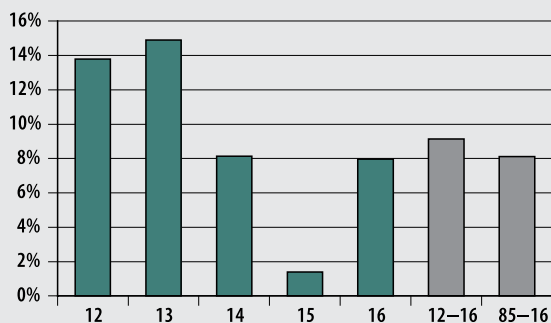
▶ Number of Disability Retirees	47
▶ Number Who Reported Earnings	14
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.03%
▶ 2016 Market Value	\$132.5M
▶ 2012-2016 (Annualized)	9.23%
▶ 1985-2016 (Annualized)	8.54%

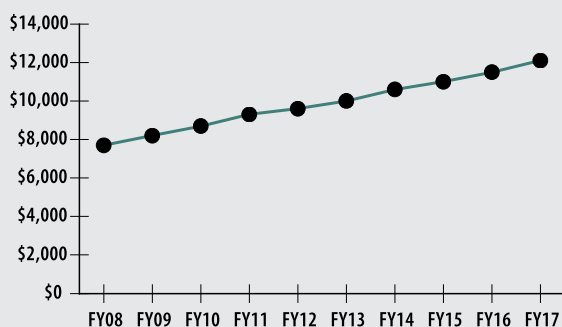
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

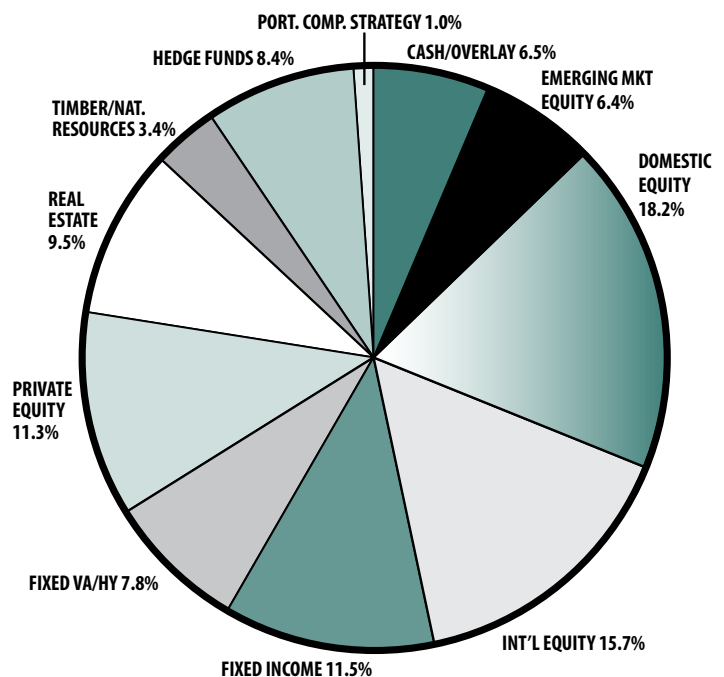
32 years 2016 8.11%	31 years 2015 8.12%	30 years 2014 8.35%
10 years 2016 4.73%	10 years 2015 5.12%	10 years 2014 5.68%
5 years 2016 9.13%	5 years 2015 7.71%	5 years 2014 10.17%

ACTUARIAL

▶ Funded Ratio	46.2%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	5.1% Total Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$129.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$12.1 M

	ACTIVE	RETIRED
▶ Number of Members	927	758
▶ Total Payroll/Benefit	\$34.8 M	\$14.6 M
▶ Average Salary/Benefit	\$37,500	\$19,200
▶ Average Age	49	75
▶ Average Service	12.3 years	NA

ASSET ALLOCATION (12/31/16)

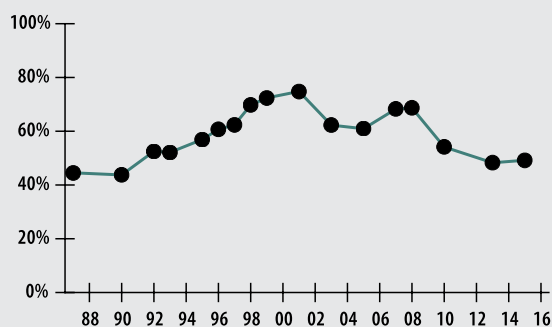


EARNED INCOME OF DISABILITY RETIREES (2015)

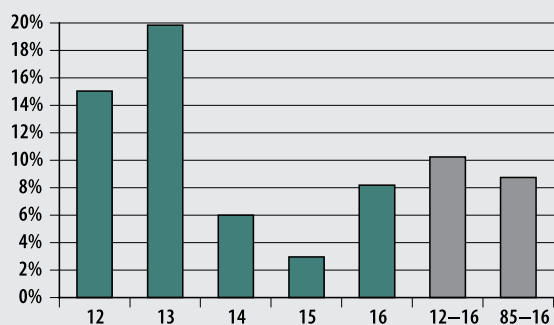
▶ Number of Disability Retirees	67
▶ Number Who Reported Earnings	22
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$10,374.53

▶ 2016 Return	7.97%
▶ 2016 Market Value	\$123.5M
▶ 2012-2016 (Annualized)	9.13%
▶ 1985-2016 (Annualized)	8.11%

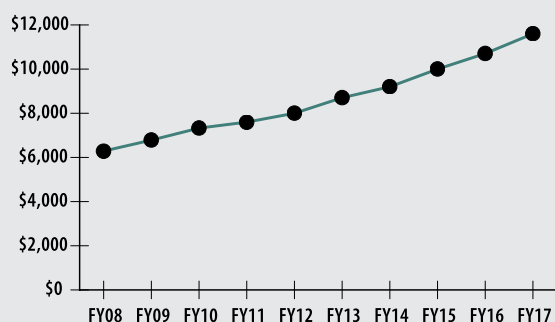
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

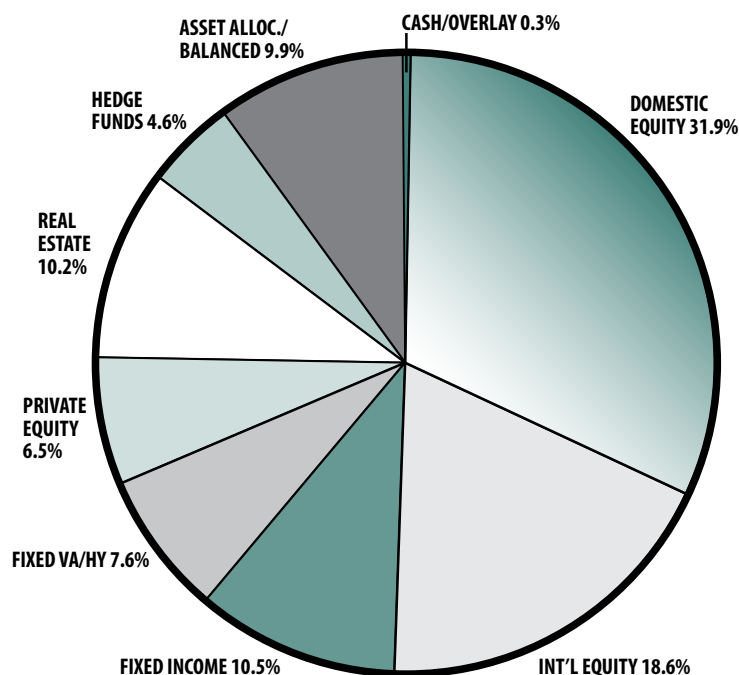
32 years 2016 8.75%	31 years 2015 8.77%	30 years 2014 8.97%
10 years 2016 5.70%	10 years 2015 6.26%	10 years 2014 6.78%
5 years 2016 10.24%	5 years 2015 8.42%	5 years 2014 10.33%

ACTUARIAL

▶ Funded Ratio	49.2%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	8.0% Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$142.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$11.6 M

	ACTIVE	RETIRED
▶ Number of Members	875	653
▶ Total Payroll/Benefit	\$39.5 M	\$15.2 M
▶ Average Salary/Benefit	\$45,100	\$23,300
▶ Average Age	49	70
▶ Average Service	12.5 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	70
▶ Number Who Reported Earnings	32
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.19%
▶ 2016 Market Value	\$155.1M
▶ 2012-2016 (Annualized)	10.24%
▶ 1985-2016 (Annualized)	8.75%

Board Members

Thomas J. O'Brien (Chairperson),
Mary Beth Carter, James E. Harrington,
Joseph F. McDonough, Esq.,
John F. Sciara

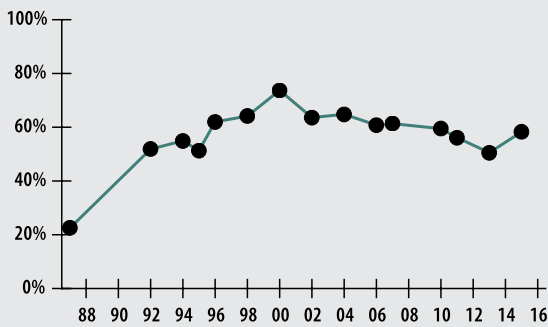
Board Administrator

David J. Sullivan

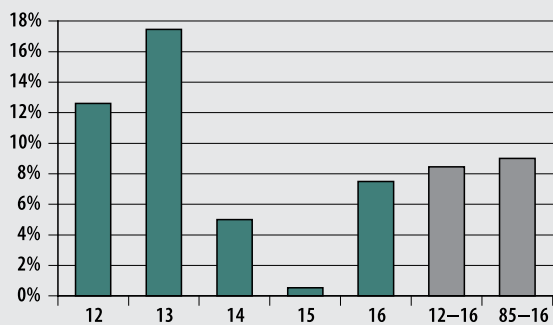
Board Meeting

Usually the last Tuesday of each month

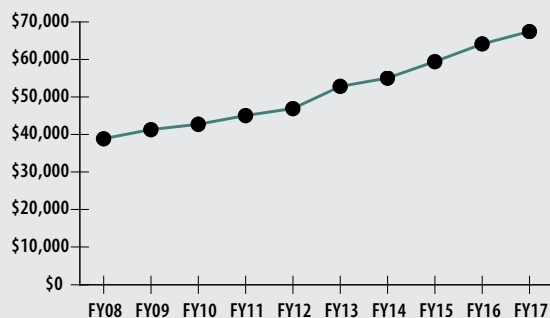
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

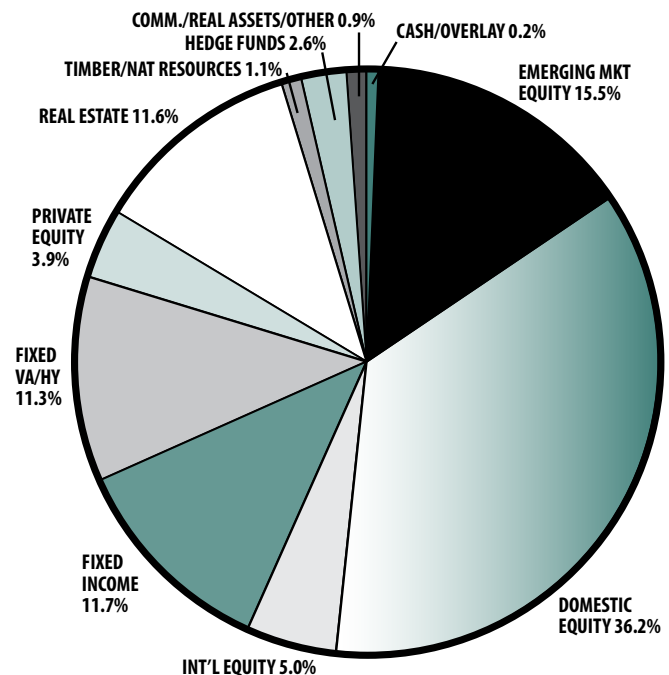
32 years 2016 9.00%	31 years 2015 9.05%	30 years 2014 9.35%
10 years 2016 4.82%	10 years 2015 5.58%	10 years 2014 6.40%
5 years 2016 8.47%	5 years 2015 7.02%	5 years 2014 10.03%

ACTUARIAL

▶ Funded Ratio	58.3%
▶ Date of Last Valuation	01/15
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	8.00%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2031
▶ Unfunded Liability	\$590.6 M
▶ Total Pension Appropriation (Fiscal 2017)	\$67.4 M

	ACTIVE	RETIRED
▶ Number of Members	5,871	3,789
▶ Total Payroll/Benefit	\$246.7 M	\$83.9 M
▶ Average Salary/Benefit	\$42,000	\$22,100
▶ Average Age	NA	71
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	298
▶ Number Who Reported Earnings	96
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$27,708.07

▶ 2016 Return	7.50%
▶ 2016 Market Value	\$882.2M
▶ 2012-2016 (Annualized)	8.47%
▶ 1985-2016 (Annualized)	9.00%

Quincy

1245 Hancock Street
Suite 39
Quincy, MA 02169
Phone 617-376-1075
Fax 617-376-1149

Board Members

George F. McCray (Chairperson),
Leo Coppens, Richard D. Fitzpatrick,
Robert E. Foy III, Susan M. O'Connor

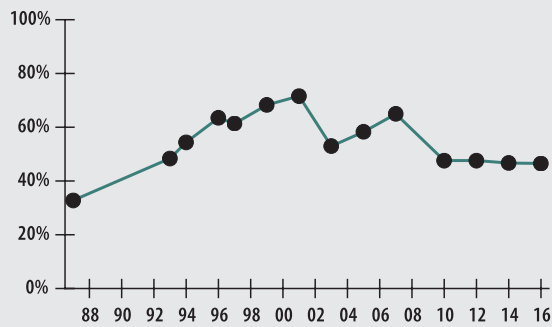
Board Administrator

Edward J. Masterson

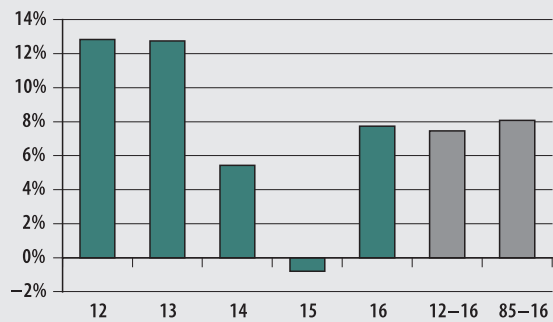
Board Meeting

Varies

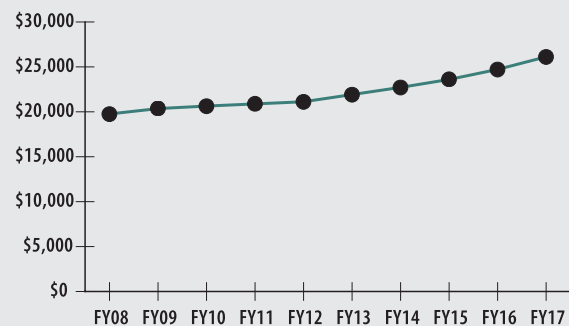
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.08%

31 years 2015

8.09%

30 years 2014

8.40%

10 years 2016

4.42%

10 years 2015

4.94%

10 years 2014

5.84%

5 years 2016

7.47%

5 years 2015

5.97%

5 years 2014

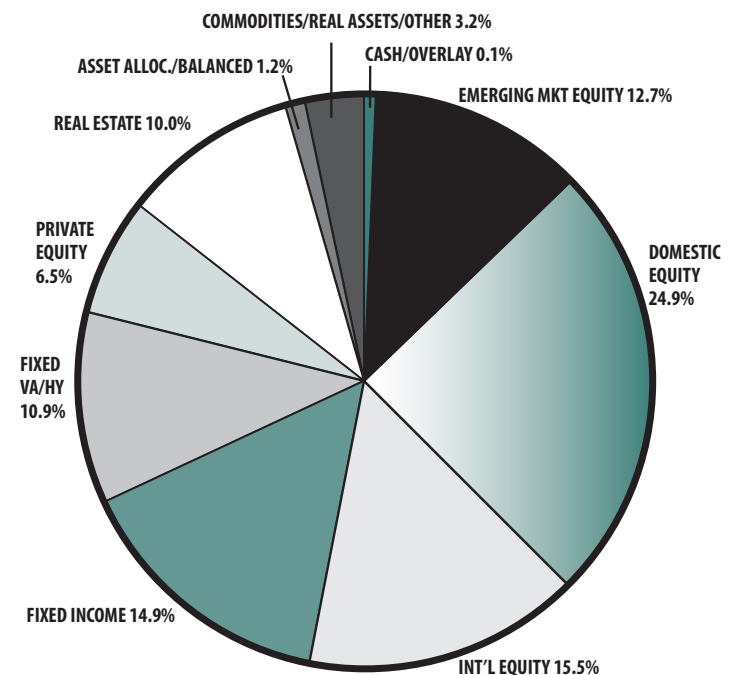
8.71%

ACTUARIAL

▶ Funded Ratio	46.8%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$359.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$26.1 M

	ACTIVE	RETIRED
▶ Number of Members	1,416	1,520
▶ Total Payroll/Benefit	\$88.1 M	\$43.1 M
▶ Average Salary/Benefit	\$62,200	\$28,400
▶ Average Age	50	74
▶ Average Service	13.0 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	121
▶ Number Who Reported Earnings	27
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.74%
▶ 2016 Market Value	\$300.7M
▶ 2012-2016 (Annualized)	7.47%
▶ 1985-2016 (Annualized)	8.08%

Reading

2 Haven Street, Unit 307
Reading, MA 01867
Phone 781-942-9007
Fax 781-623-3053

Board Members

Joseph R. Veno (Chairperson),
Sharon M. Angstrom, Thomas A. Clough,
David Gentile, Carol Roberts

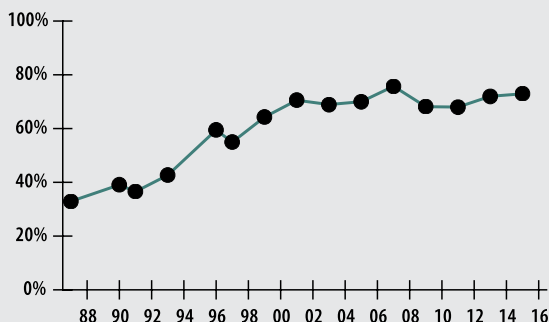
Board Administrator

Colleen Loughlin

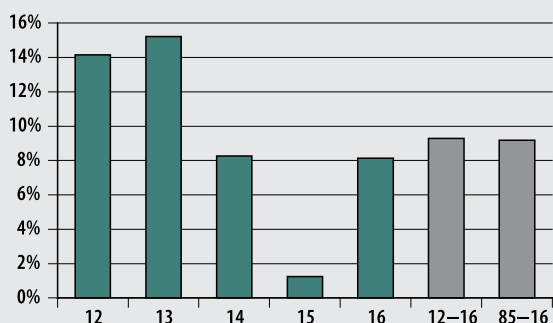
Board Meeting

Fourth Tuesday of each month at 6:00 pm

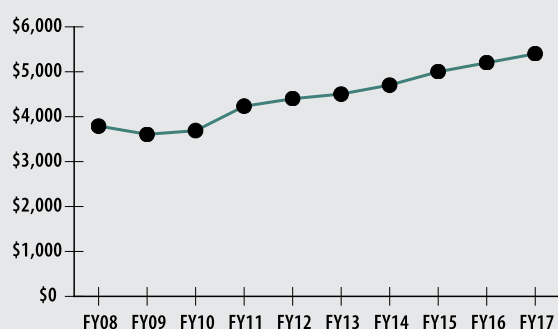
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.18%

31 years 2015

9.22%

30 years 2014

9.50%

10 years 2016

5.17%

10 years 2015

5.99%

10 years 2014

7.14%

5 years 2016

9.29%

5 years 2015

7.63%

5 years 2014

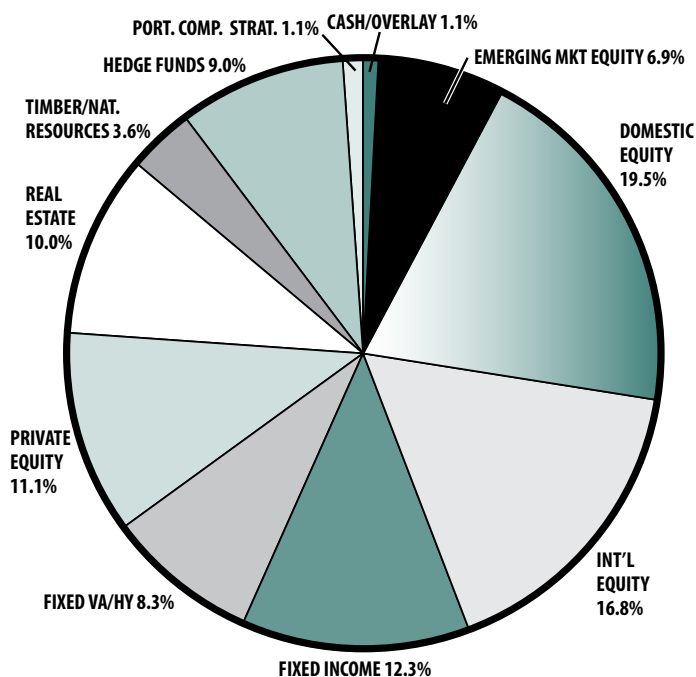
10.14%

ACTUARIAL

▶ Funded Ratio	73.0%
▶ Date of Last Valuation	01/15
▶ Actuary	KMS Actuaries
▶ Assumed Rate of Return	7.65%
▶ Funding Schedule	4.5% Total Increasing
▶ Year Fully Funded	2029
▶ Unfunded Liability	\$43.0 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.4 M

	ACTIVE	RETIRED
▶ Number of Members	333	333
▶ Total Payroll/Benefit	\$22.8 M	\$9.0 M
▶ Average Salary/Benefit	\$68,500	\$26,900
▶ Average Age	49	74
▶ Average Service	15.0 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	31
▶ Number Who Reported Earnings	10
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.14%
▶ 2016 Market Value	\$123.9M
▶ 2012-2016 (Annualized)	9.29%
▶ 1985-2016 (Annualized)	9.18%

Revere

City Hall
281 Broadway
Revere, MA 02151
Phone 781-286-8173
Fax 781-286-3316

Board Members

Laurie Giardella (Chairperson),
James Caramello, Gennaro Cataldo,
John Henry, Sean Manion

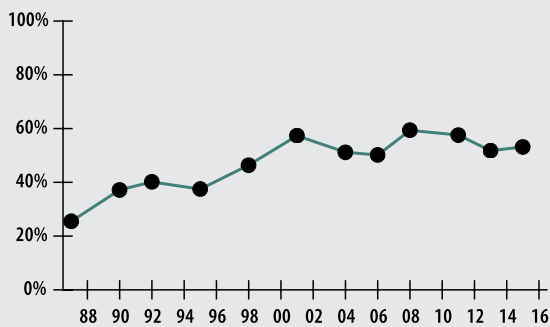
Board Administrator

Sandor Zapolin

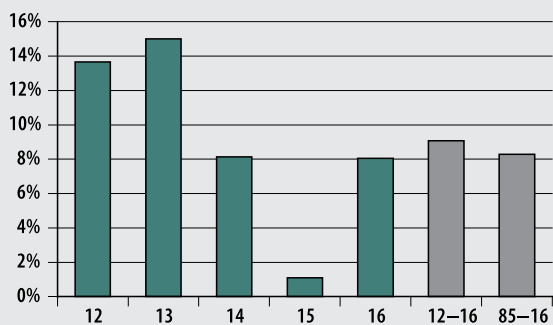
Board Meeting

Varies

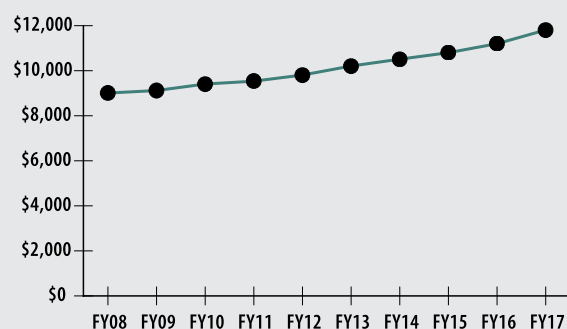
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.29%

31 years 2015
8.30%

30 years 2014
8.54%

10 years 2016
4.96%

10 years 2015
5.73%

10 years 2014
6.84%

5 years 2016
9.08%

5 years 2015
7.42%

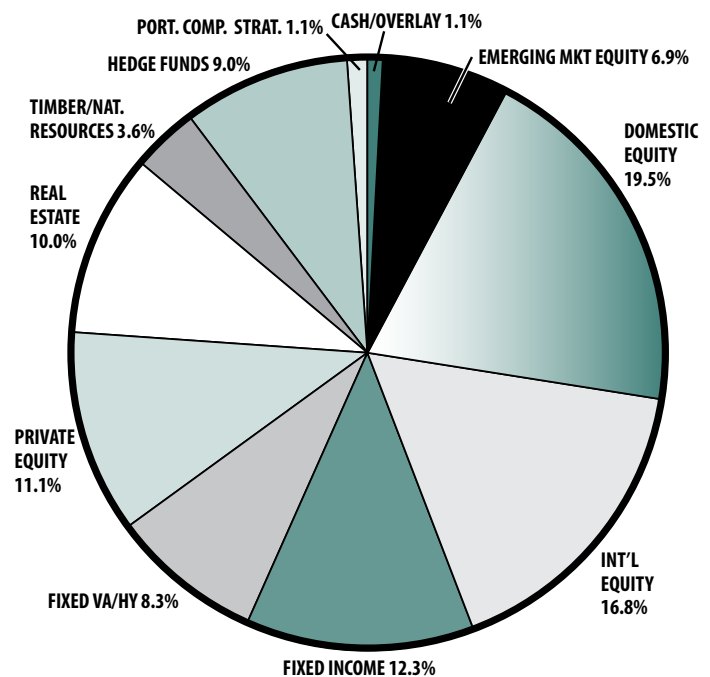
5 years 2014
9.79%

ACTUARIAL

▶ Funded Ratio	53.2%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.60%
▶ Funding Schedule	5.0% Total Increasing
▶ Year Fully Funded	2032
▶ Unfunded Liability	\$106.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$11.8 M

	ACTIVE	RETIRED
▶ Number of Members	574	527
▶ Total Payroll/Benefit	\$32.7 M	\$14.3 M
▶ Average Salary/Benefit	\$57,100	\$27,100
▶ Average Age	49	76
▶ Average Service	12.7 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	90
▶ Number Who Reported Earnings	37
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.05%
▶ 2016 Market Value	\$135.6M
▶ 2012-2016 (Annualized)	9.08%
▶ 1985-2016 (Annualized)	8.29%

Salem

20 Central Street
Suite 110
Salem, MA 01970
Phone 978-745-8983
Fax 978-745-4216

Board Members

Sarah A. Stanton (Chairperson),
Sally Hayes, Robert Lutts,
Dominick Pangallo, Marcia Pelletier

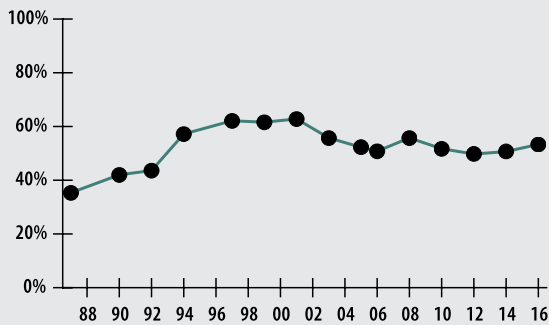
Board Administrator

Paul Findlen

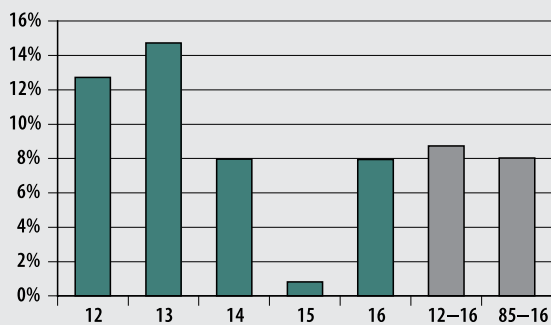
Board Meeting

Last Wednesday of each month

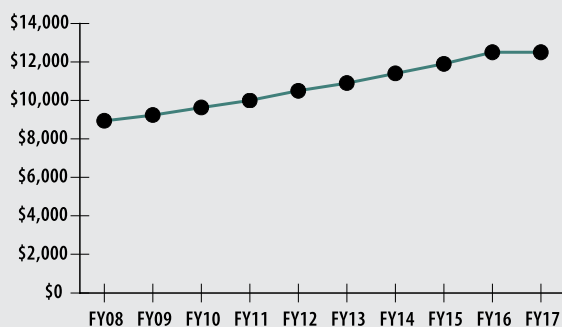
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.03%

31 years 2015
8.03%

30 years 2014
8.28%

10 years 2016
4.27%

10 years 2015
4.94%

10 years 2014
5.47%

5 years 2016
8.73%

5 years 2015
7.19%

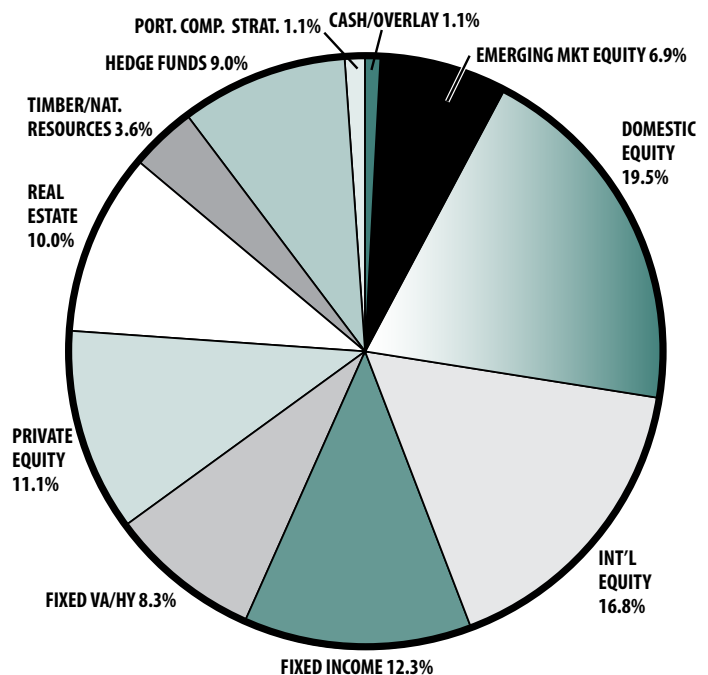
5 years 2014
9.57%

ACTUARIAL

▶ Funded Ratio	53.3%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.15% Total Increasing
▶ Year Fully Funded	2031
▶ Unfunded Liability	\$125.7 M
▶ Total Pension Appropriation (Fiscal 2017)	\$12.5 M

	ACTIVE	RETIRED
▶ Number of Members	910	573
▶ Total Payroll/Benefit	\$43.9 M	\$13.4 M
▶ Average Salary/Benefit	\$48,300	\$23,400
▶ Average Age	49	75
▶ Average Service	12.2 years	NA

ASSET ALLOCATION (12/31/16)

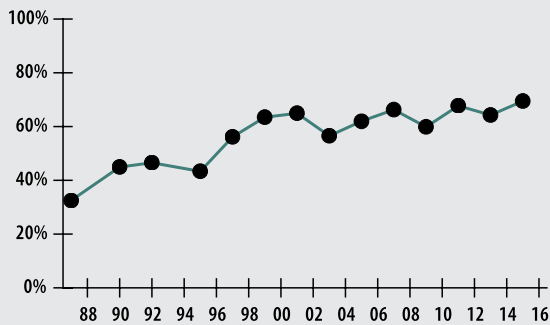


EARNED INCOME OF DISABILITY RETIREES (2015)

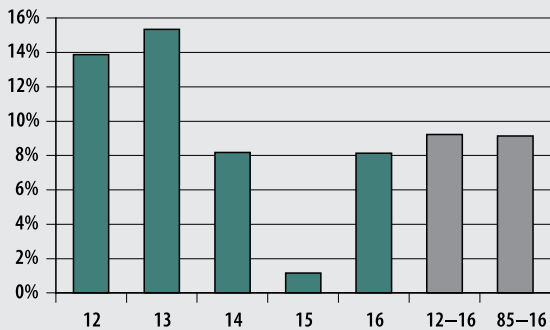
▶ Number of Disability Retirees	51
▶ Number Who Reported Earnings	14
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.94%
▶ 2016 Market Value	\$150.4M
▶ 2012-2016 (Annualized)	8.73%
▶ 1985-2016 (Annualized)	8.03%

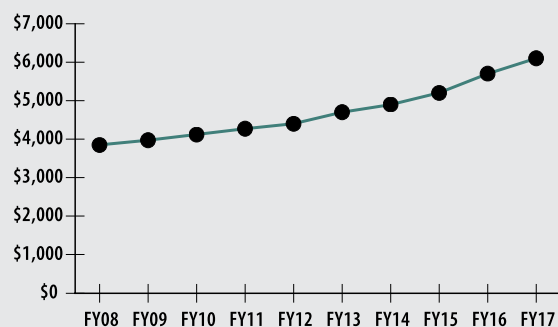
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



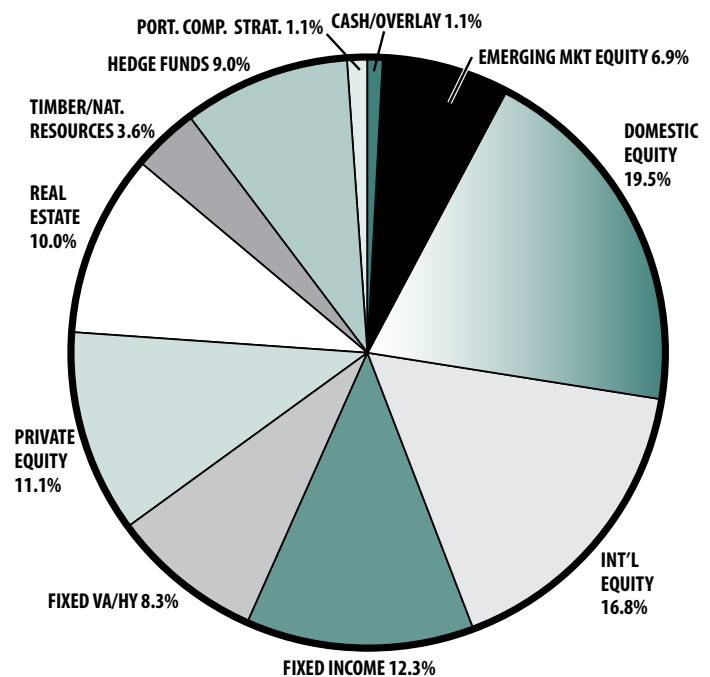
INVESTMENT RETURN HISTORY

32 years 2016	31 years 2015	30 years 2014
9.13%	9.16%	9.44%
10 years 2016	10 years 2015	10 years 2014
5.13%	5.95%	7.10%
5 years 2016	5 years 2015	5 years 2014
9.22%	7.59%	10.11%

ACTUARIAL

▶ Funded Ratio		69.5%
▶ Date of Last Valuation		01/15
▶ Actuary		PERAC
▶ Assumed Rate of Return		7.60%
▶ Funding Schedule		2.0% Increasing Phase-in
▶ Year Fully Funded		2028
▶ Unfunded Liability		\$35.4 M
▶ Total Pension Appropriation (Fiscal 2017)		\$6.1 M
	ACTIVE	RETIRED
▶ Number of Members	372	276
▶ Total Payroll/Benefit	\$17.1 M	\$6.8 M
▶ Average Salary/Benefit	\$45,900	\$24,800
▶ Average Age	47	74
▶ Average Service	11.8 years	NA

ASSET ALLOCATION (12/31/16)

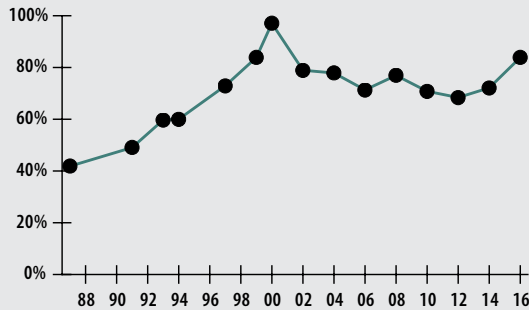


EARNED INCOME OF DISABILITY RETIREES (2015)

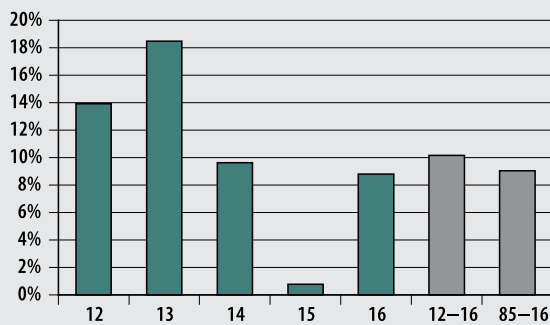
▶ Number of Disability Retirees	23
▶ Number Who Reported Earnings	8
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.13%
▶ 2016 Market Value	\$87.2M
▶ 2012-2016 (Annualized)	9.22%
▶ 1985-2016 (Annualized)	9.13%

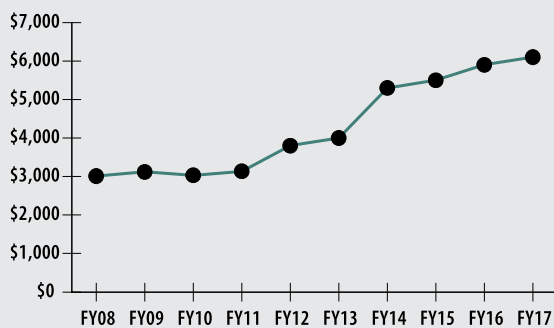
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
9.06%

31 years 2015
9.06%

30 years 2014
9.35%

10 years 2016
5.89%

10 years 2015
6.27%

10 years 2014
7.09%

5 years 2016
10.17%

5 years 2015
8.37%

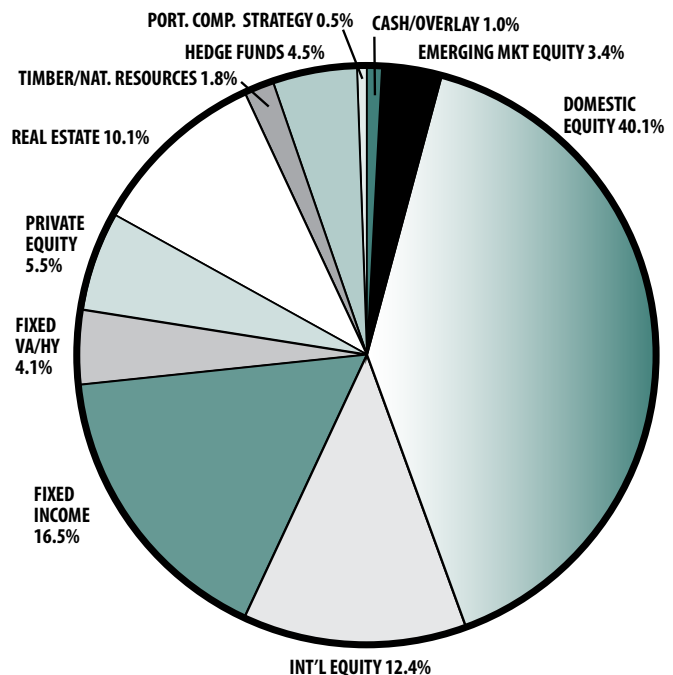
5 years 2014
11.09%

ACTUARIAL

▶ Funded Ratio	83.9%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	Level
▶ Year Fully Funded	2020
▶ Unfunded Liability	\$19.2 M
▶ Total Pension Appropriation (Fiscal 2017)	\$6.1 M

	ACTIVE	RETIRED
▶ Number of Members	511	267
▶ Total Payroll/Benefit	\$23.7 M	\$6.9 M
▶ Average Salary/Benefit	\$46,400	\$25,800
▶ Average Age	NA	73
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	21
▶ Number Who Reported Earnings	9
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.80%
▶ 2016 Market Value	\$106.8M
▶ 2012-2016 (Annualized)	10.17%
▶ 1985-2016 (Annualized)	9.06%

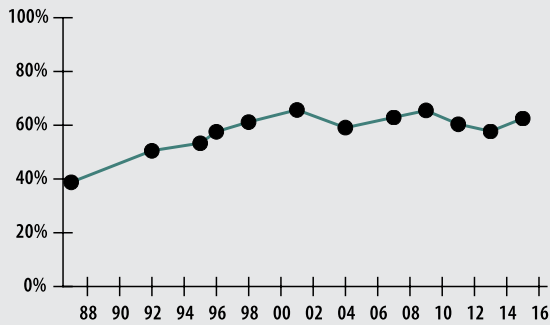
Somerville

City Hall Annex
50 Evergreen Avenue
Somerville, MA 02145
Phone 617-625-6600
Fax 617-666-4325

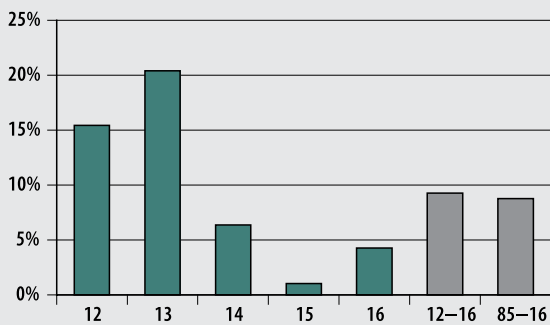
Board Members
Edward F. Bean, Jr. (Chairperson),
Robert K. Massie, John M. Memory,
Alex Nosnik, Thomas Ross

Board Administrator
Michael Pasquariello
Board Meeting
Varies

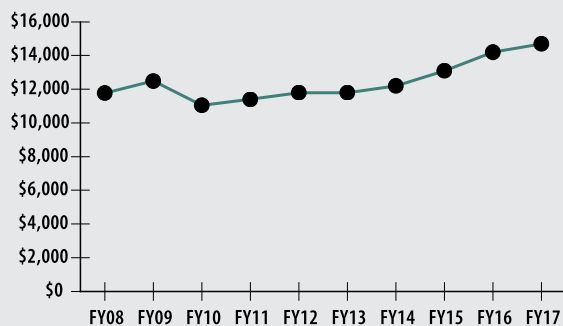
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

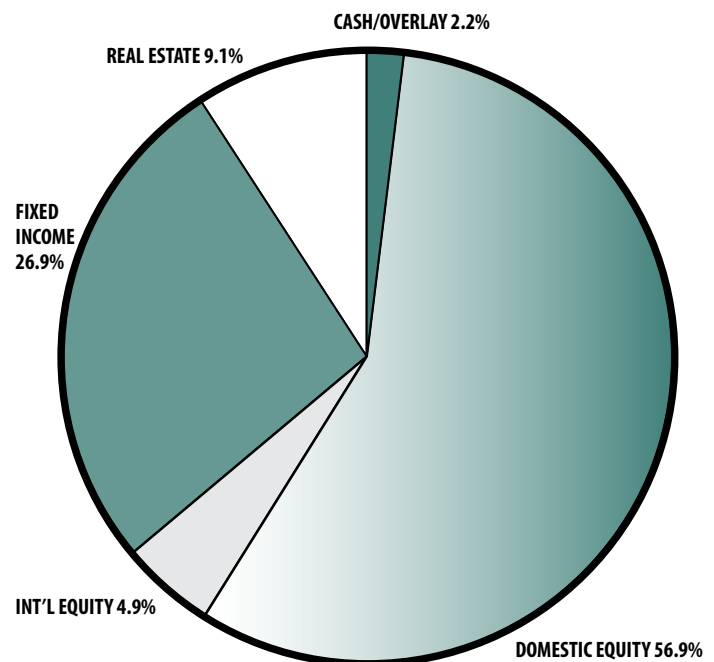
32 years 2016 8.79%	31 years 2015 8.94%	30 years 2014 9.21%
10 years 2016 6.32%	10 years 2015 7.07%	10 years 2014 7.67%
5 years 2016 9.28%	5 years 2015 8.90%	5 years 2014 11.55%

ACTUARIAL

▶ Funded Ratio	62.5%
▶ Date of Last Valuation	01/15
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	8.25%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$139.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$14.7 M

	ACTIVE	RETIRED
▶ Number of Members	1,181	911
▶ Total Payroll/Benefit	\$66.5 M	\$24.1 M
▶ Average Salary/Benefit	\$56,300	\$26,500
▶ Average Age	NA	74
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)

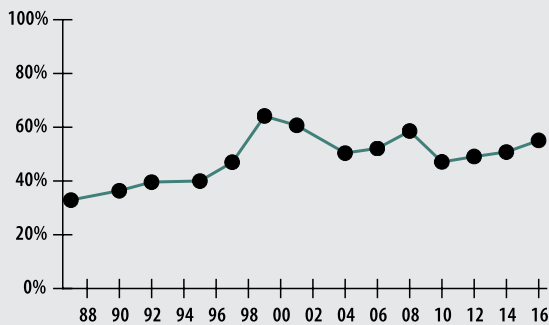


EARNED INCOME OF DISABILITY RETIREES (2015)

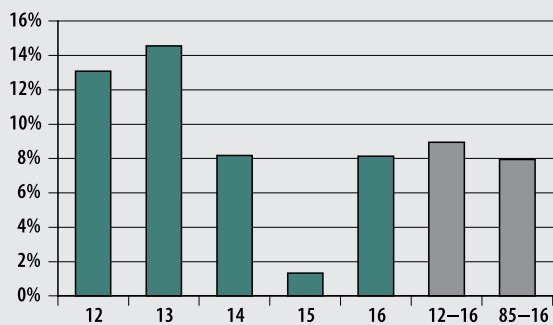
▶ Number of Disability Retirees	94
▶ Number Who Reported Earnings	25
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$111.52

▶ 2016 Return	4.29%
▶ 2016 Market Value	\$242.9M
▶ 2012-2016 (Annualized)	9.28%
▶ 1985-2016 (Annualized)	8.79%

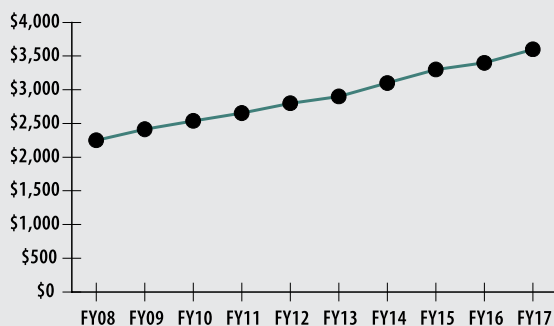
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

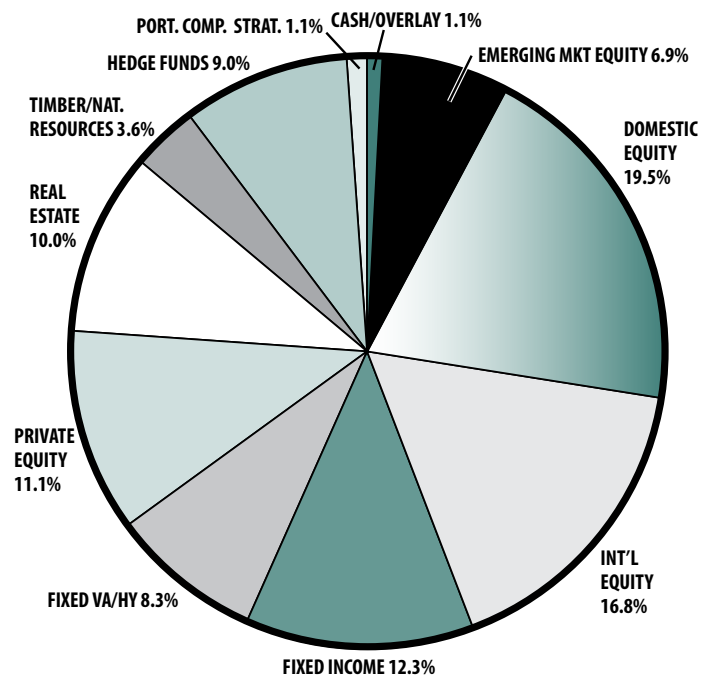
32 years 2016 7.95%	31 years 2015 7.95%	30 years 2014 8.17%
10 years 2016 3.78%	10 years 2015 4.25%	10 years 2014 4.68%
5 years 2016 8.95%	5 years 2015 7.27%	5 years 2014 9.35%

ACTUARIAL

▶ Funded Ratio	55.1%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.5% Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$34.6 M
▶ Total Pension Appropriation (Fiscal 2017)	\$3.6 M

	ACTIVE	RETIRED
▶ Number of Members	357	180
▶ Total Payroll/Benefit	\$14.9 M	\$3.9 M
▶ Average Salary/Benefit	\$41,600	\$21,900
▶ Average Age	47	73
▶ Average Service	10.0 years	NA

ASSET ALLOCATION (12/31/16)

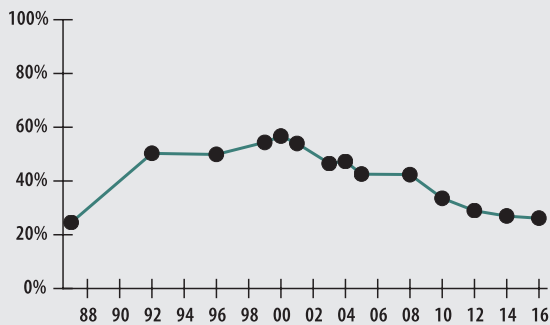


EARNED INCOME OF DISABILITY RETIREES (2015)

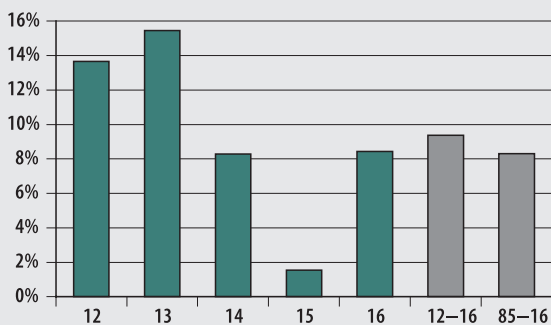
▶ Number of Disability Retirees	12
▶ Number Who Reported Earnings	5
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.13%
▶ 2016 Market Value	\$45.2M
▶ 2012-2016 (Annualized)	8.95%
▶ 1985-2016 (Annualized)	7.95%

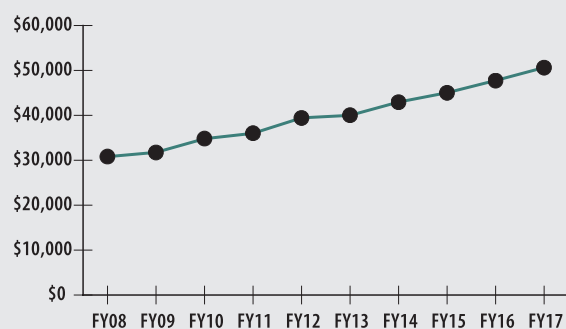
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

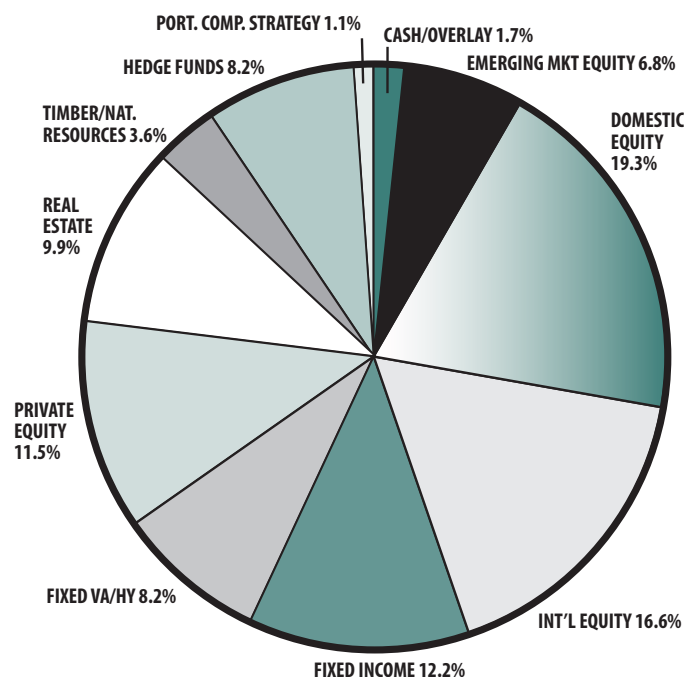
32 years 2016 8.30%	31 years 2015 8.30%	30 years 2014 8.53%
10 years 2016 4.99%	10 years 2015 5.74%	10 years 2014 6.29%
5 years 2016 9.37%	5 years 2015 7.73%	5 years 2014 10.07%

ACTUARIAL

▶ Funded Ratio	26.2%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.65%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$827.4 M
▶ Total Pension Appropriation (Fiscal 2017)	\$50.6 M

	ACTIVE	RETIRED
▶ Number of Members	3,323	2,803
▶ Total Payroll/Benefit	\$152.2 M	\$69.4 M
▶ Average Salary/Benefit	\$45,800	\$24,700
▶ Average Age	46	73
▶ Average Service	12.1 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	389
▶ Number Who Reported Earnings	118
▶ Number of Excess Earners	2
▶ Total Amount of Refund Due	\$38,932.28

▶ 2016 Return	8.43%
▶ 2016 Market Value	\$298.7M
▶ 2012-2016 (Annualized)	9.37%
▶ 1985-2016 (Annualized)	8.30%

State

Boston Office
One Winter Street, 8th floor
Boston, MA 02108
Phone 617-367-7770
Fax 617-723-1438

Board Members

Treasurer Deborah B. Goldberg (Chairperson),
Christopher S. Condon, Patricia Deal,
Theresa McGoldrick, Esq., Frank Valeri

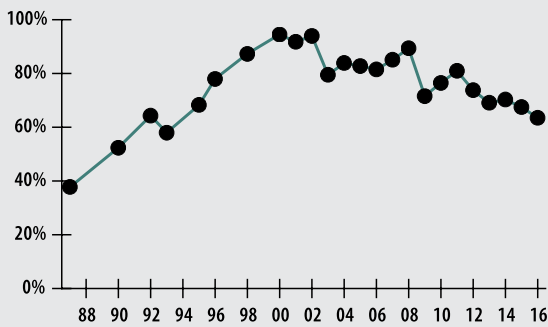
Board Administrator

Nicola Favorito, Esq.

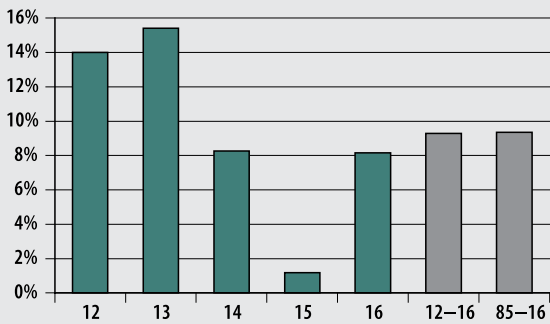
Board Meeting

Last Thursday of each month

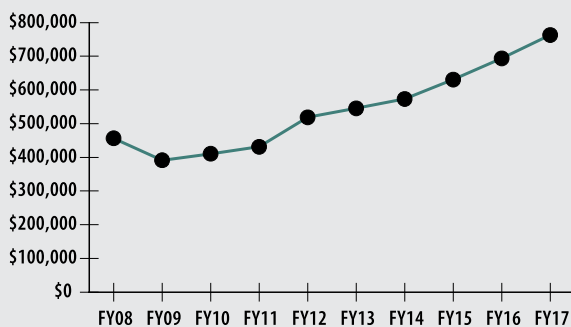
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN MILLIONS)



INVESTMENT RETURN HISTORY

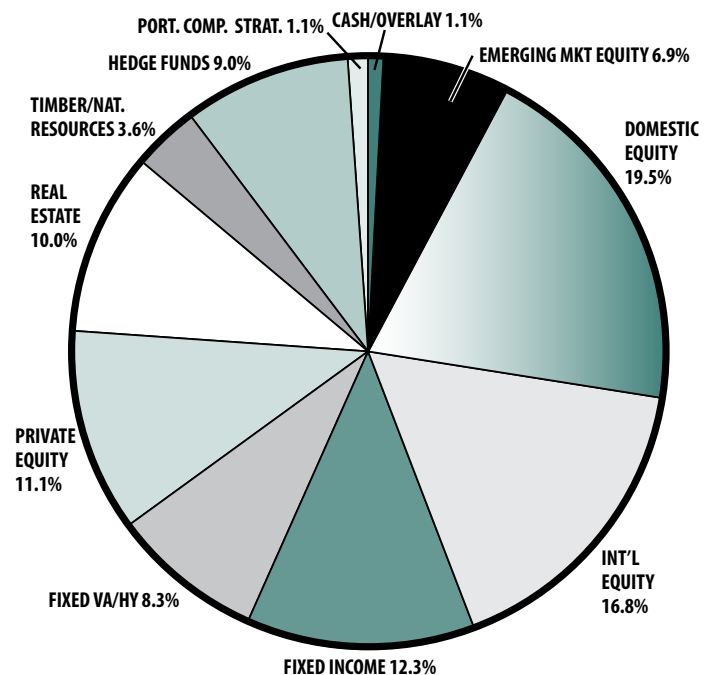
32 years 2016	31 years 2015	30 years 2014
9.36%	9.40%	9.69%
10 years 2016	10 years 2015	10 years 2014
5.15%	5.97%	7.12%
5 years 2016	5 years 2015	5 years 2014
9.28%	7.62%	10.16%

ACTUARIAL

▶ Funded Ratio	63.5%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	8.94% Total Increasing
▶ Year Fully Funded	2036
▶ Unfunded Liability	\$13.5 B
▶ Total Pension Appropriation (Fiscal 2017)	\$792.2 M

	ACTIVE	RETIRED
▶ Number of Members	88,081	61,377
▶ Total Payroll/Benefit	\$5.8 B	\$2.0 B
▶ Average Salary/Benefit	\$65,800	\$32,600
▶ Average Age	47	72
▶ Average Service	12.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	3244
▶ Number Who Reported Earnings	881
▶ Number of Excess Earners	11
▶ Total Amount of Refund Due	\$135,523.17

▶ 2016 Return	8.15%
▶ 2016 Market Value	\$24.2B
▶ 2012-2016 (Annualized)	9.28%
▶ 1985-2016 (Annualized)	9.36%

Stoneham

Town Hall
35 Central Street
Stoneham, MA 02180-2087
Phone 781-279-2635
Fax 781-438-6906

Board Members

Janice T. Houghton (Chairperson),
James J. McDermott, Jr., Donald Piatt,
John Scullin, Kathleen Sullivan

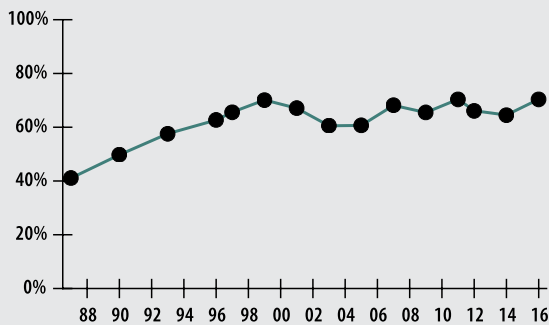
Board Administrator

Karen DeAngelis

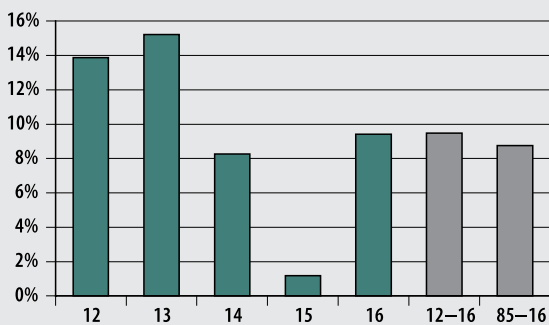
Board Meeting

Last Tuesday of each month at 2:00 pm

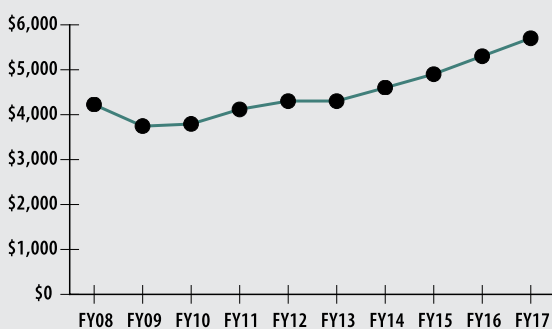
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

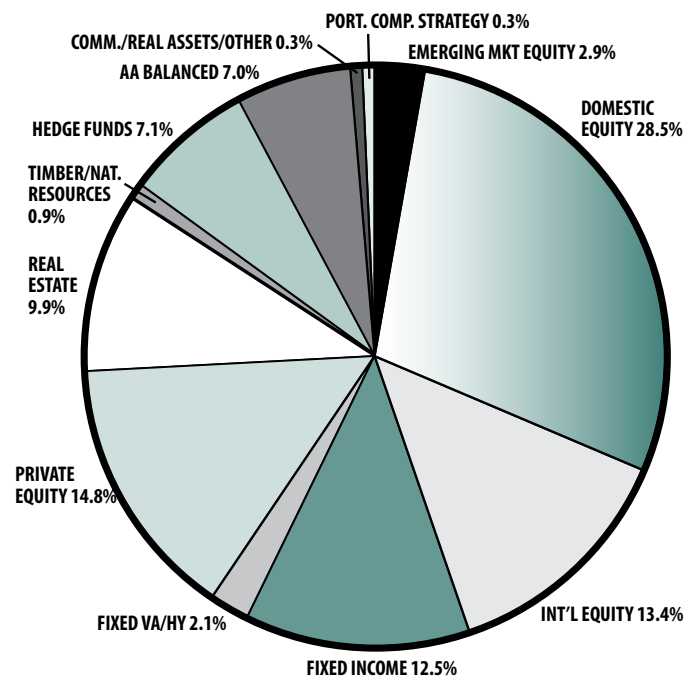
32 years 2016 8.76%	31 years 2015 8.74%	30 years 2014 9.00%
10 years 2016 5.26%	10 years 2015 5.95%	10 years 2014 7.10%
5 years 2016 9.48%	5 years 2015 7.57%	5 years 2014 10.11%

ACTUARIAL

▶ Funded Ratio	70.4%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	7.85% Total Increasing
▶ Year Fully Funded	2024
▶ Unfunded Liability	\$32.0 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.7 M

	ACTIVE	RETIRED
▶ Number of Members	274	282
▶ Total Payroll/Benefit	\$13.8 M	\$7.0 M
▶ Average Salary/Benefit	\$50,200	\$24,800
▶ Average Age	50	76
▶ Average Service	13.2 years	NA

ASSET ALLOCATION (12/31/16)

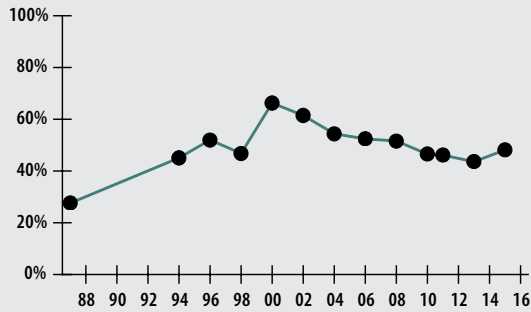


EARNED INCOME OF DISABILITY RETIREES (2015)

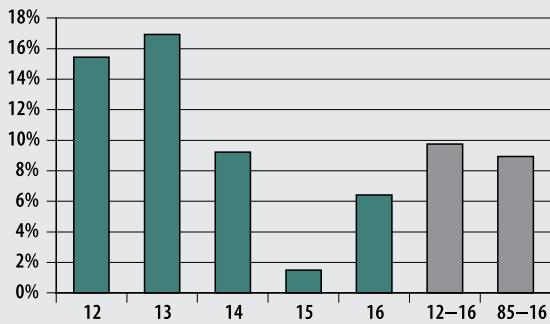
▶ Number of Disability Retirees	18
▶ Number Who Reported Earnings	6
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	9.42%
▶ 2016 Market Value	\$79.9M
▶ 2012-2016 (Annualized)	9.48%
▶ 1985-2016 (Annualized)	8.76%

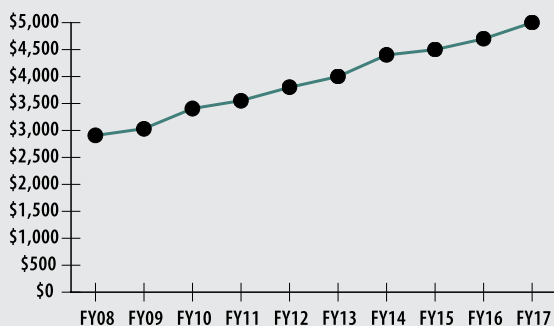
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

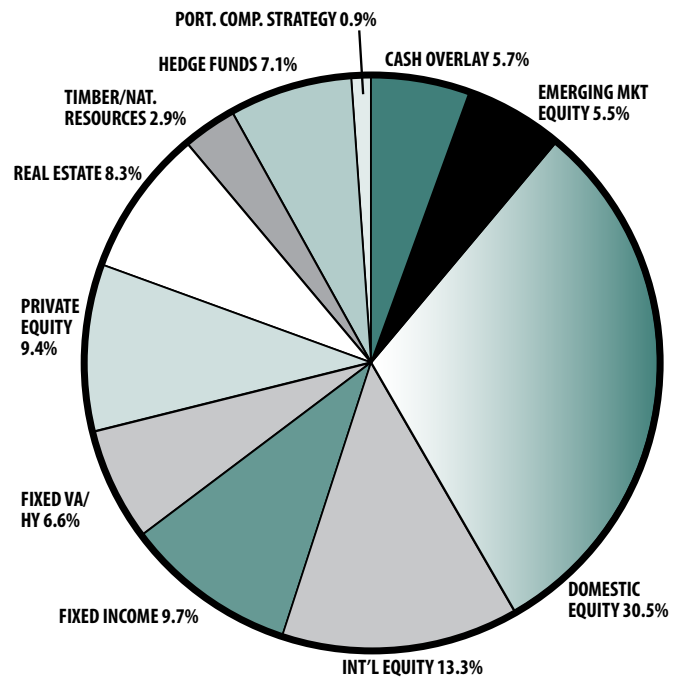
32 years 2016 8.94%	31 years 2015 9.03%	30 years 2014 9.29%
10 years 2016 5.31%	10 years 2015 5.81%	10 years 2014 6.54%
5 years 2016 9.75%	5 years 2015 8.03%	5 years 2014 9.85%

ACTUARIAL

▶ Funded Ratio	48.2%
▶ Date of Last Valuation	01/15
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	8.00%
▶ Funding Schedule	4.0% Increasing
▶ Year Fully Funded	2031
▶ Unfunded Liability	\$45.6 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.0 M

	ACTIVE	RETIRED
▶ Number of Members	250	202
▶ Total Payroll/Benefit	\$12.3 M	\$5.3 M
▶ Average Salary/Benefit	\$49,100	\$26,000
▶ Average Age	49	74
▶ Average Service	12.9 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	18
▶ Number Who Reported Earnings	5
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	6.42%
▶ 2016 Market Value	\$48.9M
▶ 2012-2016 (Annualized)	9.75%
▶ 1985-2016 (Annualized)	8.94%

Board Members

Ann Marie Hebert (Chairperson),
Barry Amaral, Peter H. Corr, Gill E. Enos,
Dennis M. Smith

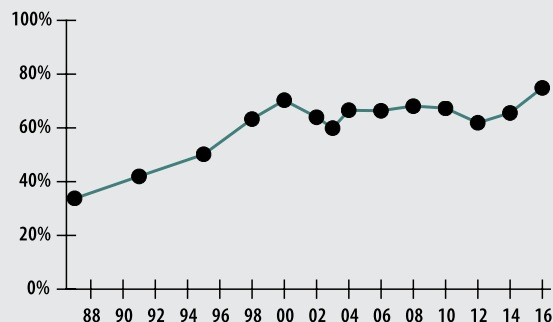
Board Administrator

Paul J. Slivinski

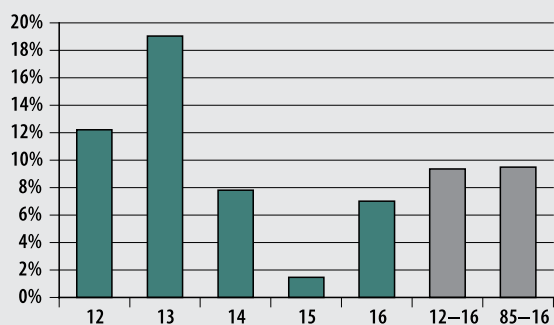
Board Meeting

Varies

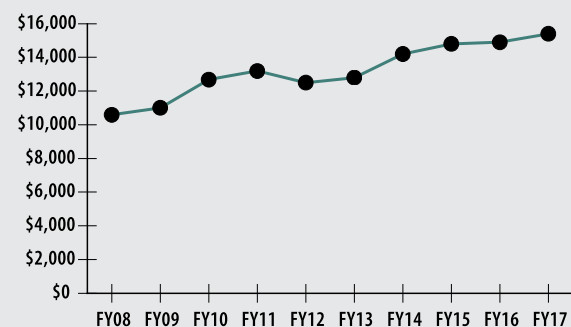
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.51%

31 years 2015

9.59%

30 years 2014

9.87%

10 years 2016

5.99%

10 years 2015

6.55%

10 years 2014

6.98%

5 years 2016

9.37%

5 years 2015

7.97%

5 years 2014

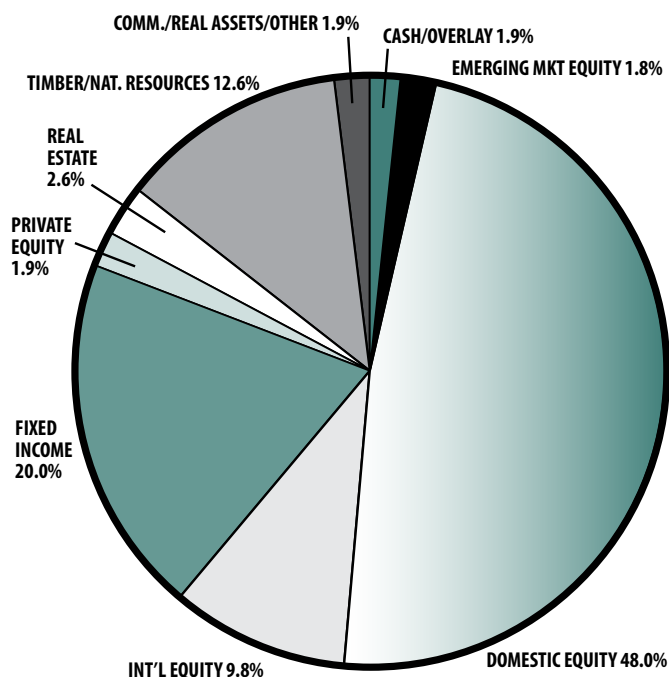
10.80%

ACTUARIAL

▶ Funded Ratio	74.9%
▶ Date of Last Valuation	01/16
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	3.0% Increasing
▶ Year Fully Funded	2026
▶ Unfunded Liability	\$93.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$15.4 M

	ACTIVE	RETIRED
▶ Number of Members	1,104	822
▶ Total Payroll/Benefit	\$59.2 M	\$22.3 M
▶ Average Salary/Benefit	\$53,600	\$27,100
▶ Average Age	NA	73
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	74
▶ Number Who Reported Earnings	20
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.03%
▶ 2016 Market Value	\$275.5M
▶ 2012-2016 (Annualized)	9.37%
▶ 1985-2016 (Annualized)	9.51%

Wakefield

1 Lafayette Street
Wakefield, MA 01880
Phone 781-246-6352
Fax 781-246-2400

Board Members

Kevin Gill (Chairperson),
Daniel C. Calore, Richard J. DeFelice,
Philip Rogers, Sr., Daniel Sherman

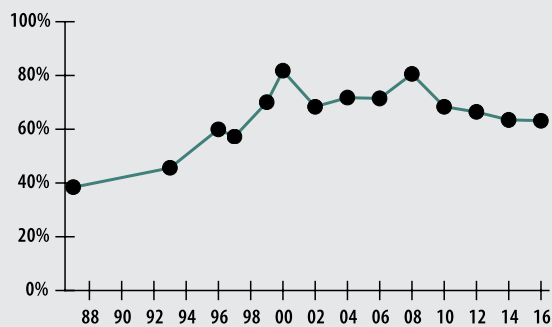
Board Administrator

Cathy Cheek

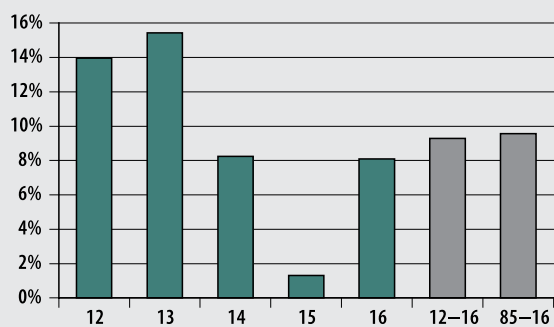
Board Meeting

Third Thursday of each month

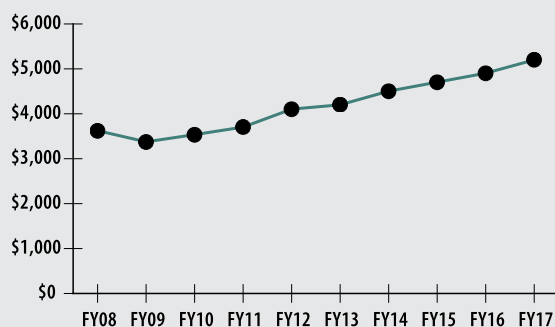
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
9.57%

31 years 2015
9.61%

30 years 2014
9.90%

10 years 2016
5.16%

10 years 2015
5.98%

10 years 2014
7.12%

5 years 2016
9.29%

5 years 2015
7.67%

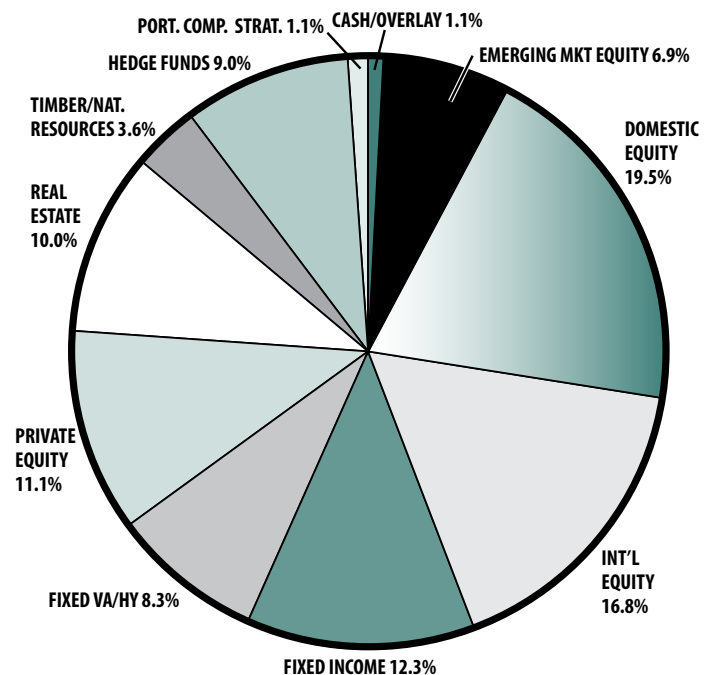
5 years 2014
10.18%

ACTUARIAL

▶ Funded Ratio	63.2%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	7.18% Total Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$60.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$5.2 M

	ACTIVE	RETIRED
▶ Number of Members	458	361
▶ Total Payroll/Benefit	\$25.1 M	\$9.7 M
▶ Average Salary/Benefit	\$54,700	\$26,800
▶ Average Age	48	74
▶ Average Service	11.9 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	32
▶ Number Who Reported Earnings	6
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.09%
▶ 2016 Market Value	\$108.0M
▶ 2012-2016 (Annualized)	9.29%
▶ 1985-2016 (Annualized)	9.57%

Waltham

610 Main Street
Waltham, MA 02452
Phone 781-314-3230
Fax 781-314-3236

Board Members

William R. MacDonald (Chairperson),
Elizabeth Arnold, Paul G. Centofanti,
Scott Hovsepian, William F. Wiggin

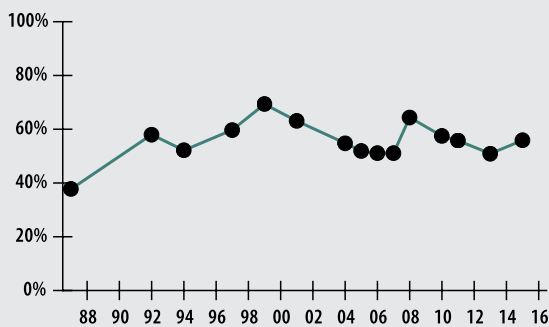
Board Administrator

Joseph F. Juppé

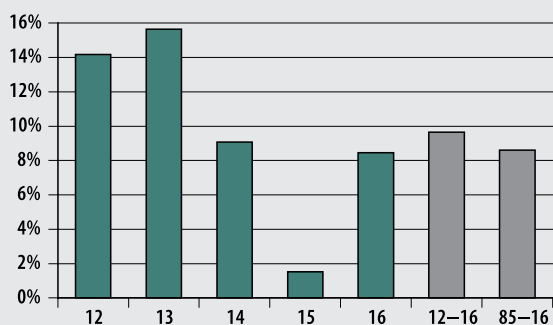
Board Meeting

Varies

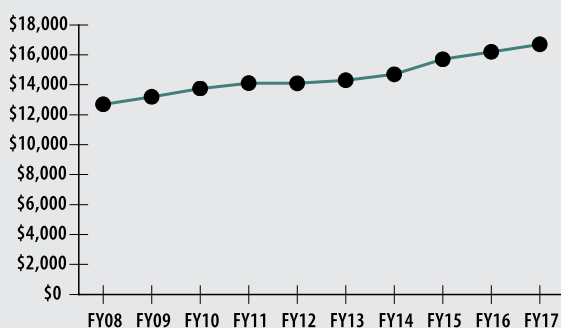
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.61%

31 years 2015

8.62%

30 years 2014

8.86%

10 years 2016

5.07%

10 years 2015

5.59%

10 years 2014

6.14%

5 years 2016

9.66%

5 years 2015

8.23%

5 years 2014

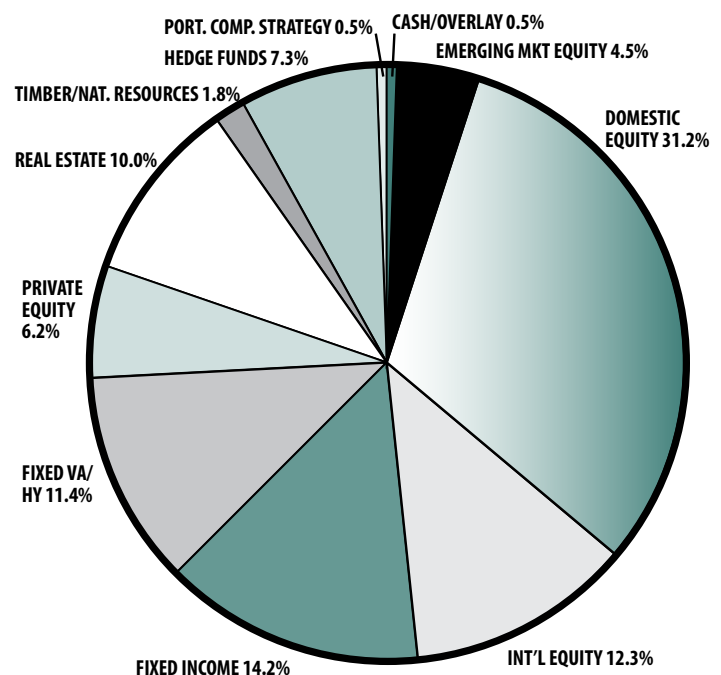
10.76%

ACTUARIAL

▶ Funded Ratio	55.9%
▶ Date of Last Valuation	01/15
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	8.25%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2033
▶ Unfunded Liability	\$153.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$16.7 M

	ACTIVE	RETIRED
▶ Number of Members	898	771
▶ Total Payroll/Benefit	\$55.6 M	\$22.7 M
▶ Average Salary/Benefit	\$61,900	\$29,400
▶ Average Age	NA	73
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	75
▶ Number Who Reported Earnings	19
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.46%
▶ 2016 Market Value	\$217.0M
▶ 2012-2016 (Annualized)	9.66%
▶ 1985-2016 (Annualized)	8.61%

Watertown

P. O. Box 199, 149 Main Street
Watertown, MA 02471-0199
Phone 617-972-6456,
888-972-6456 (toll free)
Fax 617-923-3531

Board Members

Thomas V. Thibaut, Jr. (Chairperson),
Domenic D. Arone, Kathleen Kiely-Becchetti,
John T. Loughran, Thomas J. Tracy

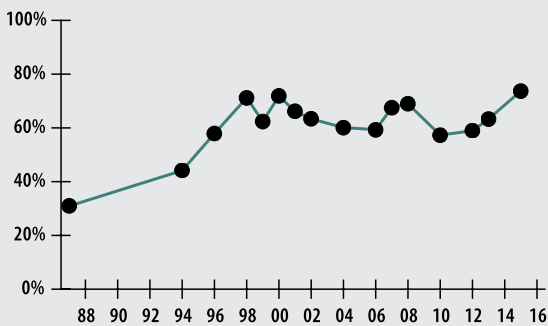
Board Administrator

Barbara A. Sheehan

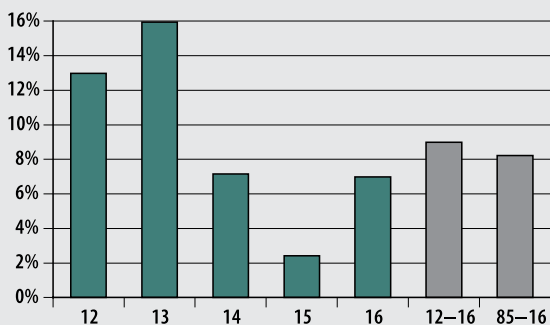
Board Meeting

Varies

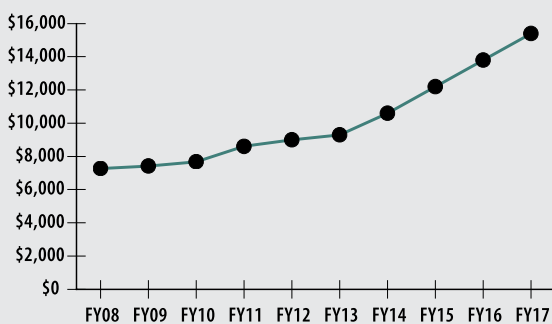
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.22%

31 years 2015
8.26%

30 years 2014
8.46%

10 years 2016
4.96%

10 years 2015
5.77%

10 years 2014
6.11%

5 years 2016
8.99%

5 years 2015
7.45%

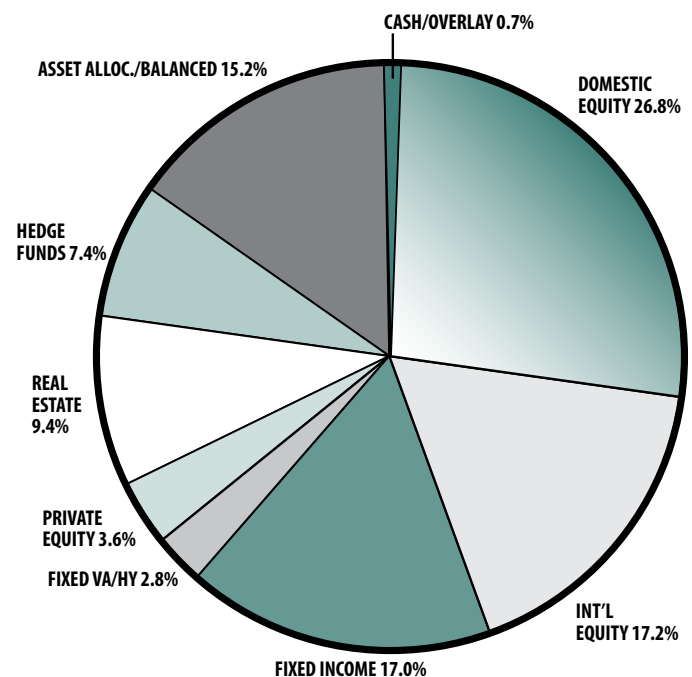
5 years 2014
9.72%

ACTUARIAL

▶ Funded Ratio	73.7%
▶ Date of Last Valuation	01/15
▶ Actuary	Sherman Actuarial Services, LLC
▶ Assumed Rate of Return	8.00%
▶ Funding Schedule	Varies Total Increasing
▶ Year Fully Funded	2019
▶ Unfunded Liability	\$47.0 M
▶ Total Pension Appropriation (Fiscal 2017)	\$15.4 M

	ACTIVE	RETIRED
▶ Number of Members	533	413
▶ Total Payroll/Benefit	\$30.3 M	\$11.5 M
▶ Average Salary/Benefit	\$56,900	\$27,800
▶ Average Age	NA	76
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)

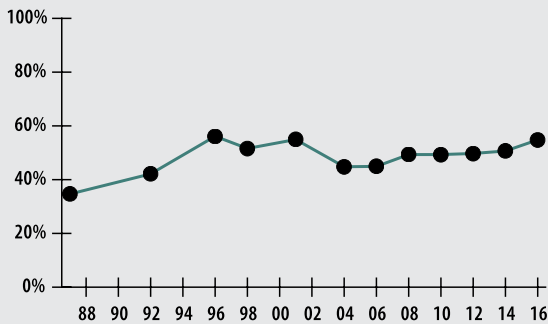


EARNED INCOME OF DISABILITY RETIREES (2015)

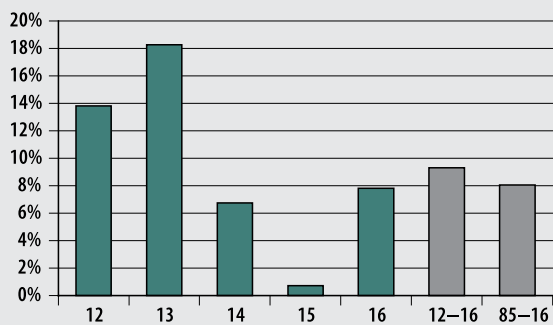
▶ Number of Disability Retirees	42
▶ Number Who Reported Earnings	12
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	6.98%
▶ 2016 Market Value	\$154.1M
▶ 2012-2016 (Annualized)	8.99%
▶ 1985-2016 (Annualized)	8.22%

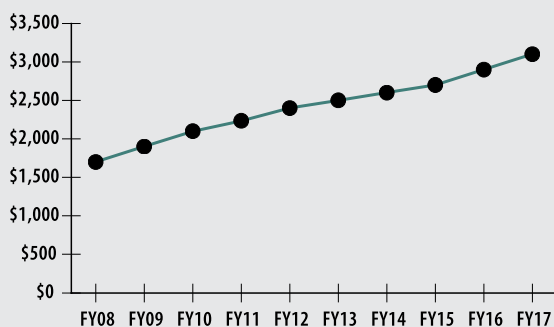
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

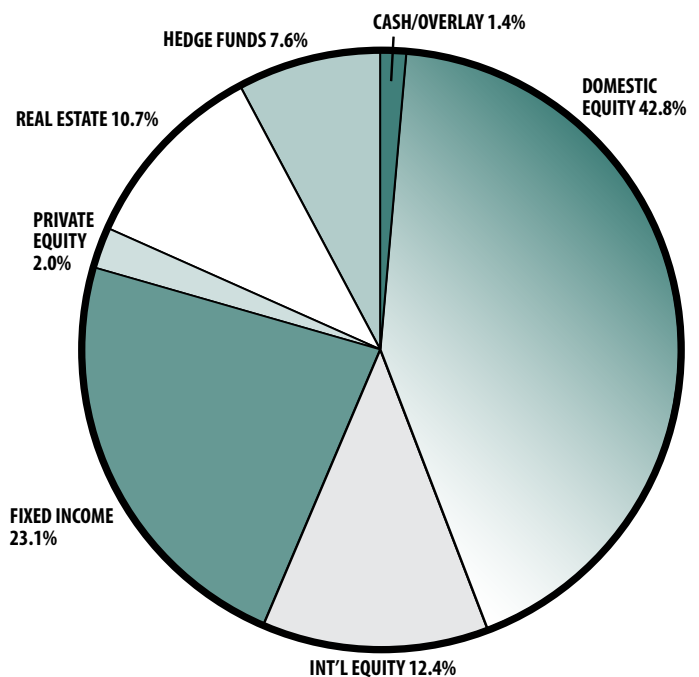
32 years 2016 8.06%	31 years 2015 8.07%	30 years 2014 8.32%
10 years 2016 5.66%	10 years 2015 6.12%	10 years 2014 6.84%
5 years 2016 9.32%	5 years 2015 7.72%	5 years 2014 10.57%

ACTUARIAL

▶ Funded Ratio	54.8%
▶ Date of Last Valuation	01/16
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	6.0% Total Increasing
▶ Year Fully Funded	2031
▶ Unfunded Liability	\$26.6 M
▶ Total Pension Appropriation (Fiscal 2017)	\$3.1 M

	ACTIVE	RETIRED
▶ Number of Members	255	136
▶ Total Payroll/Benefit	\$10.6 M	\$3.0 M
▶ Average Salary/Benefit	\$41,500	\$22,200
▶ Average Age	46	73
▶ Average Service	10.6 years	NA

ASSET ALLOCATION (12/31/16)

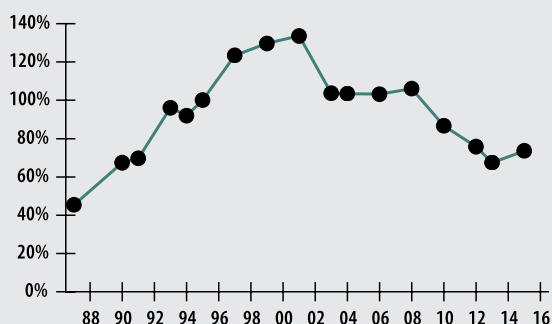


EARNED INCOME OF DISABILITY RETIREES (2015)

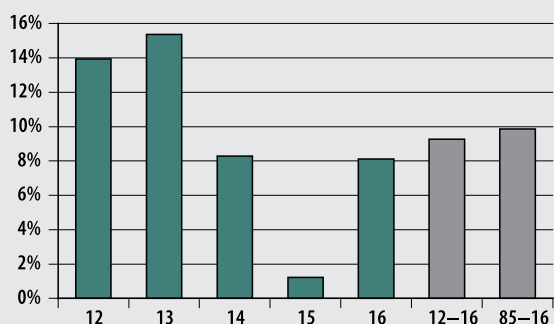
▶ Number of Disability Retirees	7
▶ Number Who Reported Earnings	1
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.82%
▶ 2016 Market Value	\$32.4M
▶ 2012-2016 (Annualized)	9.32%
▶ 1985-2016 (Annualized)	8.06%

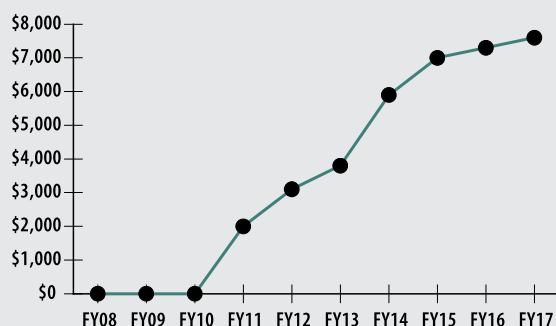
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

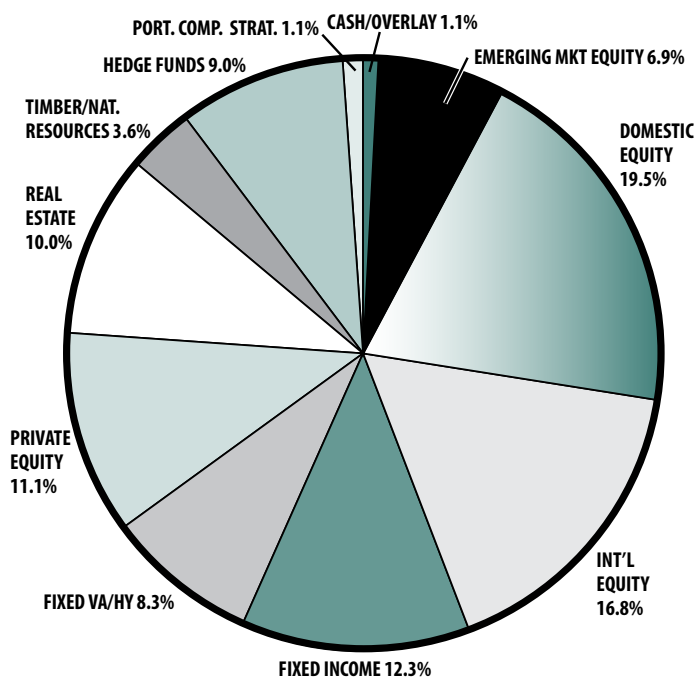
32 years 2016 9.86%	31 years 2015 9.92%	30 years 2014 10.22%
10 years 2016 4.82%	10 years 2015 5.58%	10 years 2014 6.46%
5 years 2016 9.27%	5 years 2015 7.63%	5 years 2014 10.15%

ACTUARIAL

▶ Funded Ratio	73.6%
▶ Date of Last Valuation	01/15
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	6.75%
▶ Funding Schedule	3.5% Increasing
▶ Year Fully Funded	2030
▶ Unfunded Liability	\$55.0 M
▶ Total Pension Appropriation (Fiscal 2017)	\$7.6 M

	ACTIVE	RETIRED
▶ Number of Members	685	407
▶ Total Payroll/Benefit	\$36.0 M	\$10.4 M
▶ Average Salary/Benefit	\$52,500	\$25,400
▶ Average Age	46	NA
▶ Average Service	10.7 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	31
▶ Number Who Reported Earnings	10
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.11%
▶ 2016 Market Value	\$164.3M
▶ 2012-2016 (Annualized)	9.27%
▶ 1985-2016 (Annualized)	9.86%

West Springfield

26 Central Street
Suite 26
West Springfield, MA 01089-2766
Phone 413-495-1891 x.1019
Fax 413-263-3198

Board Members

Sharon Wilcox (Chairperson),
Gerard P. Connor, Jr., Thomas J. Cummings,
Gwen E. Keough, Daniel Marini

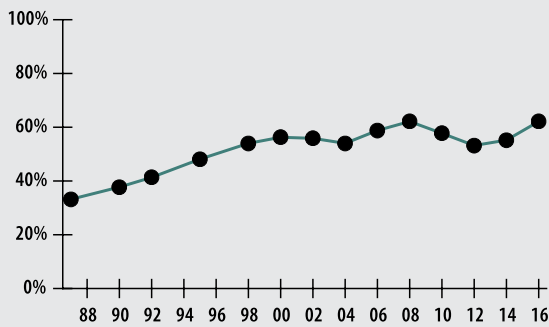
Board Administrator

James Lovotti

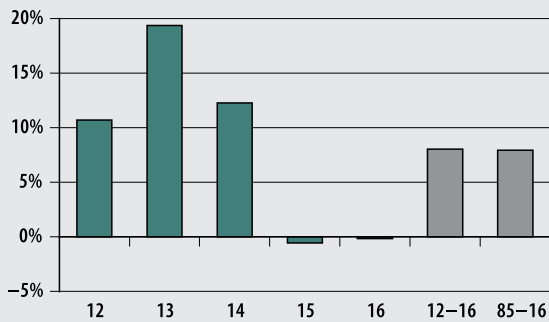
Board Meeting

Varies

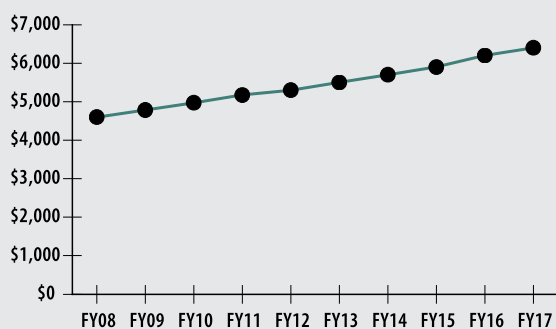
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
7.94%

31 years 2015
8.21%

30 years 2014
8.52%

10 years 2016
5.26%

10 years 2015
6.11%

10 years 2014
6.89%

5 years 2016
8.06%

5 years 2015
8.88%

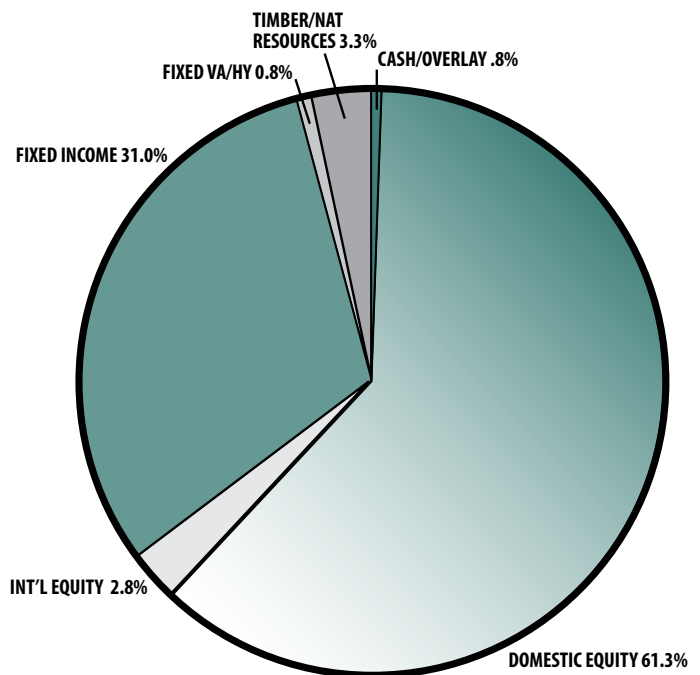
5 years 2014
11.59%

ACTUARIAL

▶ Funded Ratio	62.2%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.13% Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$63.0 M
▶ Total Pension Appropriation (Fiscal 2017)	\$6.4 M

▶ Number of Members	592	385
▶ Total Payroll/Benefit	\$25.1 M	\$8.8 M
▶ Average Salary/Benefit	\$42,500	\$22,700
▶ Average Age	48	73
▶ Average Service	12.4 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	31
▶ Number Who Reported Earnings	13
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$50,203.80

▶ 2016 Return	-.15%
▶ 2016 Market Value	\$98.4M
▶ 2012-2016 (Annualized)	8.06%
▶ 1985-2016 (Annualized)	7.94%

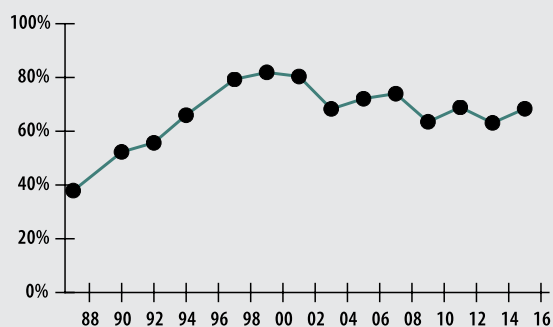
Westfield

59 Court Street
P. O. Box 106
Westfield, MA 01086-0106
Phone 413-572-6239
Fax 413-642-9410

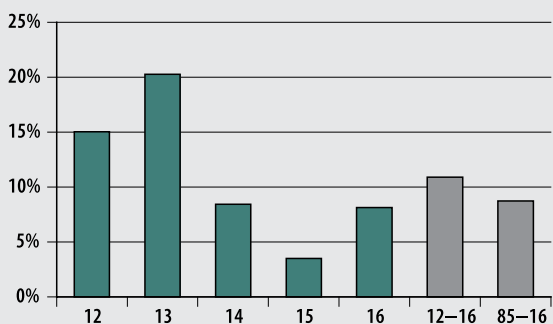
Board Members
Mark Devine (Chairperson),
Mary Daley, Brian Fanion,
Christopher Kane, Michael J. Powers

Board Administrator
Lynn E. Rea
Board Meeting
Third Thursday of each month at 3:00 pm

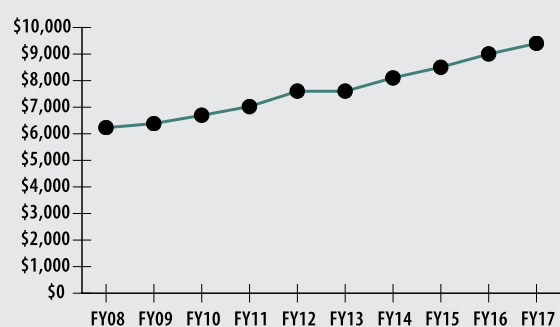
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

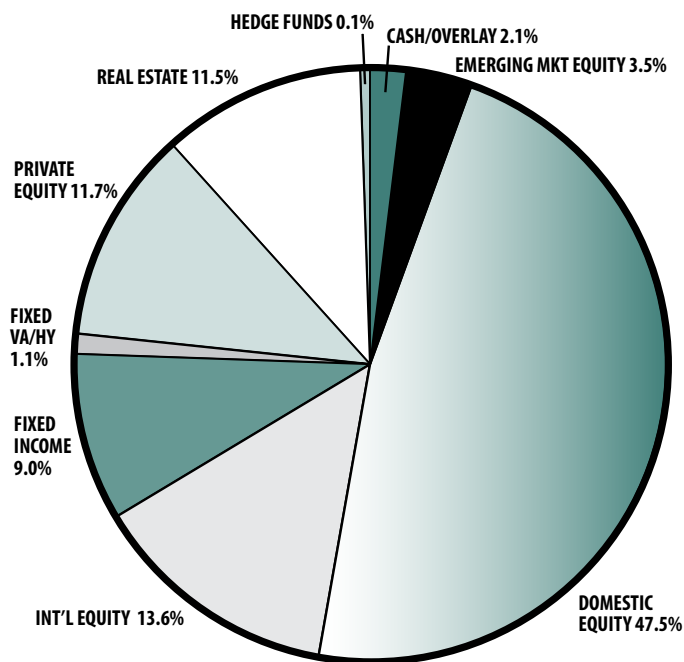
32 years 2016 8.75%	31 years 2015 8.77%	30 years 2014 8.95%
10 years 2016 6.34%	10 years 2015 6.67%	10 years 2014 6.96%
5 years 2016 10.93%	5 years 2015 9.27%	5 years 2014 11.08%

ACTUARIAL

▶ Funded Ratio	68.4%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	5.0% Total Increasing
▶ Year Fully Funded	2034
▶ Unfunded Liability	\$84.3 M
▶ Total Pension Appropriation (Fiscal 2017)	\$9.4 M

	ACTIVE	RETIRED
▶ Number of Members	897	626
▶ Total Payroll/Benefit	\$37.9 M	\$15.1 M
▶ Average Salary/Benefit	\$42,200	\$24,100
▶ Average Age	48	72
▶ Average Service	12.0 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	47
▶ Number Who Reported Earnings	11
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.14%
▶ 2016 Market Value	\$207.4M
▶ 2012-2016 (Annualized)	10.93%
▶ 1985-2016 (Annualized)	8.75%

Weymouth

807 Broad Street
Weymouth, MA 02189
Phone 781-331-8721
Fax 781-331-3005

Board Members

Greg Hargadon (Chairperson),
Patrice A. Cook, Joseph L. Davis,
Richard Hayes, Edward J. Masterson

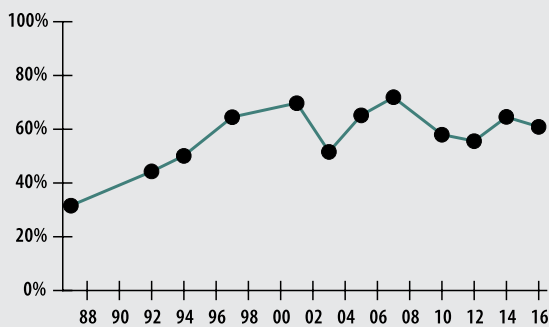
Board Administrator

Jo-Ann Anti

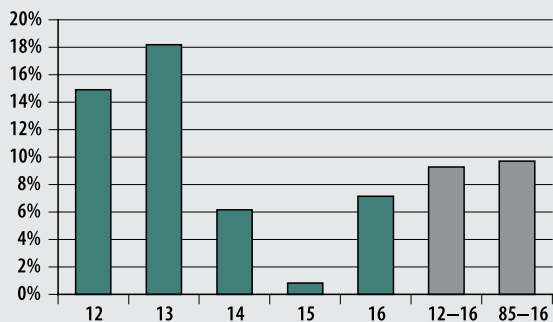
Board Meeting

Third Monday of each month,
unless otherwise posted

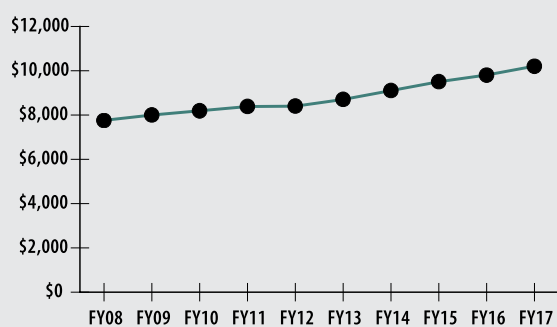
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.73%

31 years 2015

9.81%

30 years 2014

10.12%

10 years 2016

5.19%

10 years 2015

6.01%

10 years 2014

6.81%

5 years 2016

9.28%

5 years 2015

7.45%

5 years 2014

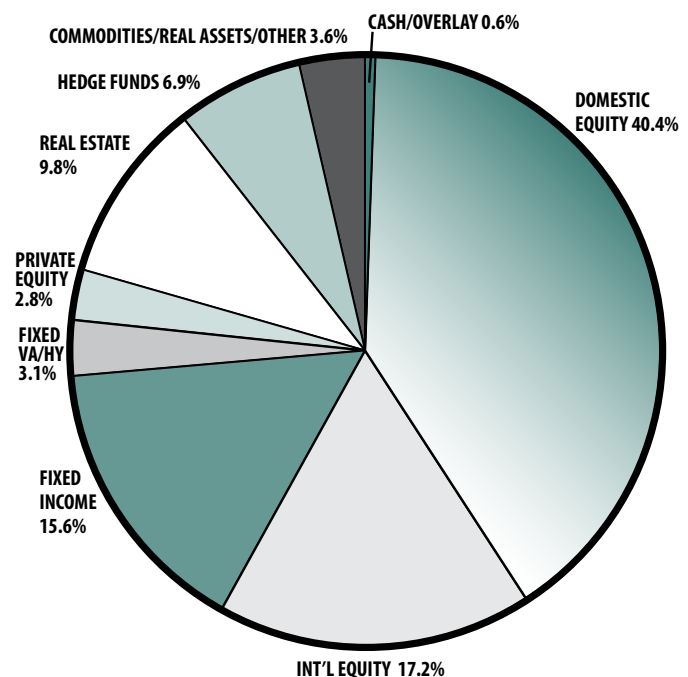
10.22%

ACTUARIAL

▶ Funded Ratio	60.9%
▶ Date of Last Valuation	01/16
▶ Actuary	Stone Consulting
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	3.6% Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$108.1 M
▶ Total Pension Appropriation (Fiscal 2017)	\$10.2 M

	ACTIVE	RETIRED
▶ Number of Members	840	621
▶ Total Payroll/Benefit	\$38.3 M	\$17.1 M
▶ Average Salary/Benefit	\$45,600	\$27,500
▶ Average Age	49	74
▶ Average Service	11.5 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	76
▶ Number Who Reported Earnings	22
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.17%
▶ 2016 Market Value	\$177.2M
▶ 2012-2016 (Annualized)	9.28%
▶ 1985-2016 (Annualized)	9.73%

Board Members

George F. Morrissey, Esq., (Chairperson),
Paul J. DeLuca, James B. Gray, Stacie Ward,
William Zink

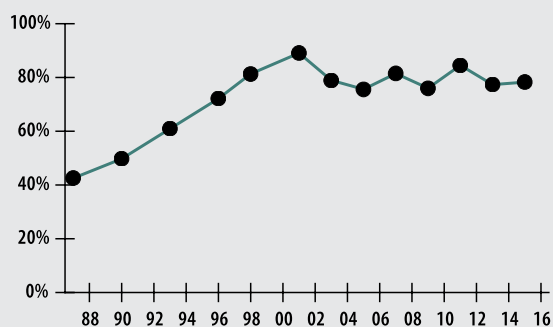
Board Administrator

Karen Manchuso

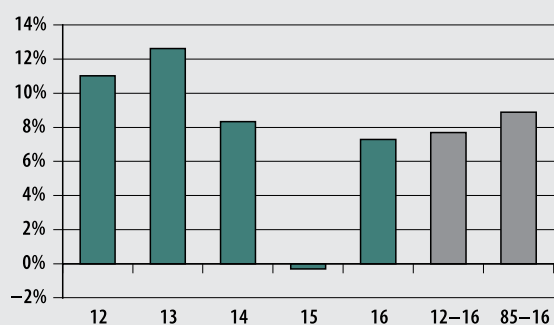
Board Meeting

Varies

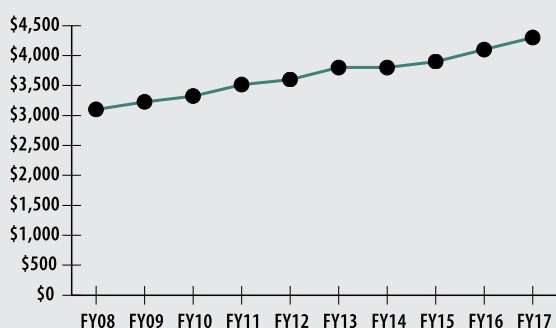
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.90%

31 years 2015
8.95%

30 years 2014
9.28%

10 years 2016
4.45%

10 years 2015
5.18%

10 years 2014
6.34%

5 years 2016
7.70%

5 years 2015
6.29%

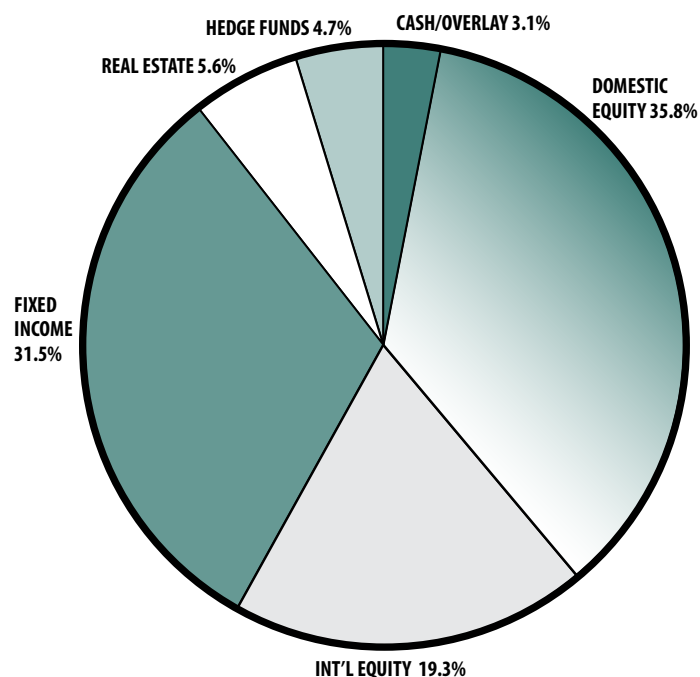
5 years 2014
8.24%

ACTUARIAL

▶ Funded Ratio	78.3%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.25%
▶ Funding Schedule	5.5% Total Increasing
▶ Year Fully Funded	2029
▶ Unfunded Liability	\$27.9 M
▶ Total Pension Appropriation (Fiscal 2017)	\$4.3 M

	ACTIVE	RETIRED
▶ Number of Members	365	267
▶ Total Payroll/Benefit	\$18.5 M	\$6.6 M
▶ Average Salary/Benefit	\$50,800	\$24,700
▶ Average Age	49	75
▶ Average Service	13.4 years	NA

ASSET ALLOCATION (12/31/16)

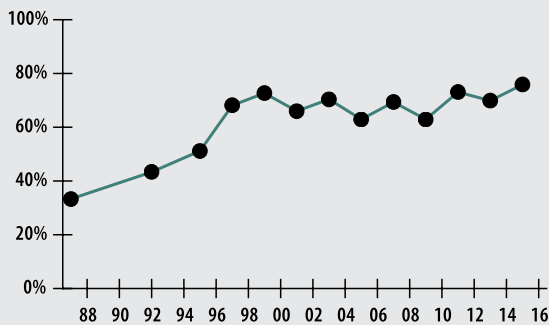


EARNED INCOME OF DISABILITY RETIREES (2015)

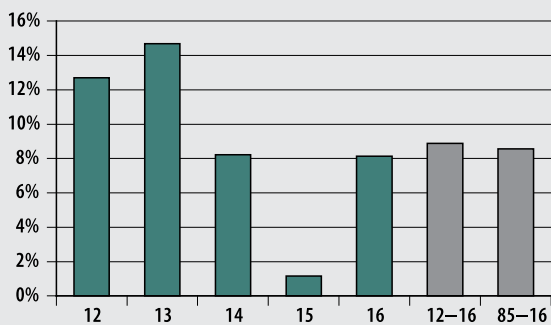
▶ Number of Disability Retirees	18
▶ Number Who Reported Earnings	4
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.30%
▶ 2016 Market Value	\$108.0M
▶ 2012-2016 (Annualized)	7.70%
▶ 1985-2016 (Annualized)	8.90%

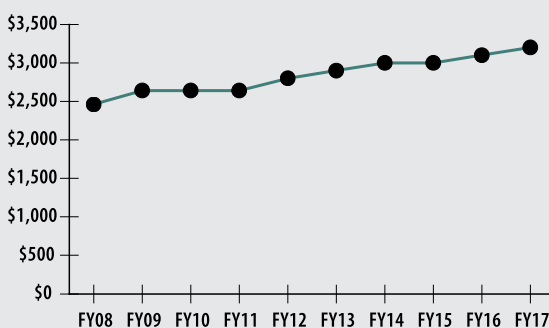
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

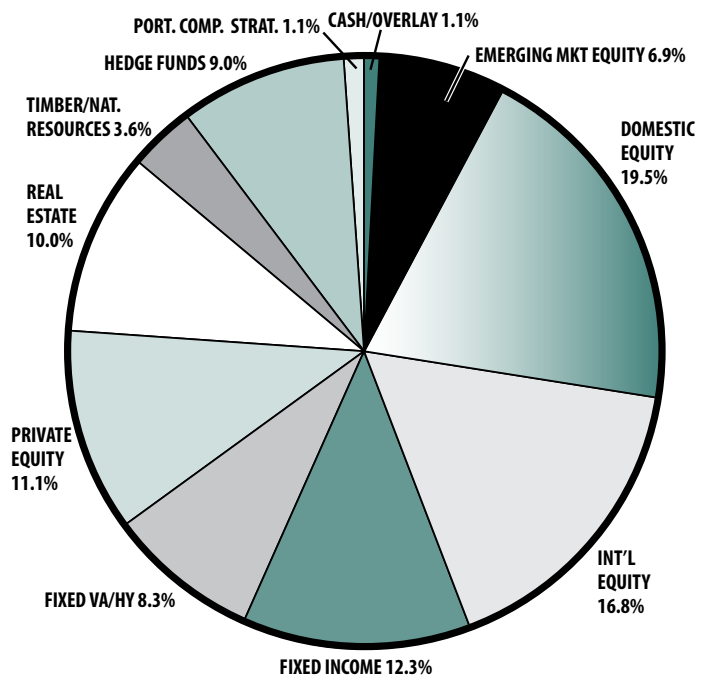
32 years 2016 8.56%	31 years 2015 8.58%	30 years 2014 8.83%
10 years 2016 4.99%	10 years 2015 5.71%	10 years 2014 6.80%
5 years 2016 8.88%	5 years 2015 7.24%	5 years 2014 9.60%

ACTUARIAL

▶ Funded Ratio	75.9%
▶ Date of Last Valuation	01/15
▶ Actuary	PERAC
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	4.0% Total Increasing
▶ Year Fully Funded	2028
▶ Unfunded Liability	\$16.8 M
▶ Total Pension Appropriation (Fiscal 2017)	\$3.2 M

	ACTIVE	RETIRED
▶ Number of Members	257	186
▶ Total Payroll/Benefit	\$11.7 M	\$3.6 M
▶ Average Salary/Benefit	\$45,500	\$19,100
▶ Average Age	49	75
▶ Average Service	12.2 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	15
▶ Number Who Reported Earnings	2
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	8.13%
▶ 2016 Market Value	\$59.9M
▶ 2012-2016 (Annualized)	8.88%
▶ 1985-2016 (Annualized)	8.56%

Woburn

City Hall, Second Floor
10 Common Street
Woburn, MA 01801-4139
Phone 781-897-5820
Fax 781-897-5824

Board Members

Denis P. Devine (Chairperson),
Charles E. Doherty, Michael J. Gorman,
Marilou E. Lundin, Gerald W. Surette

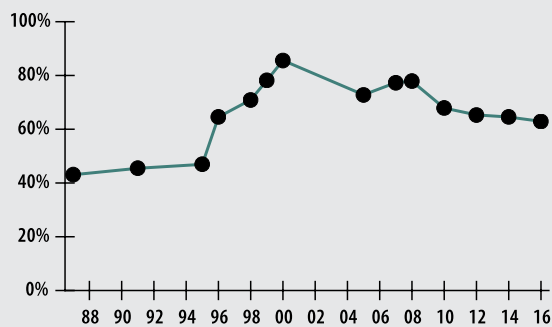
Board Administrator

Maureen T. Marcucci

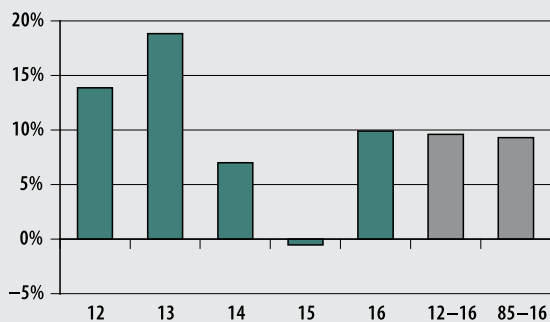
Board Meeting

Varies

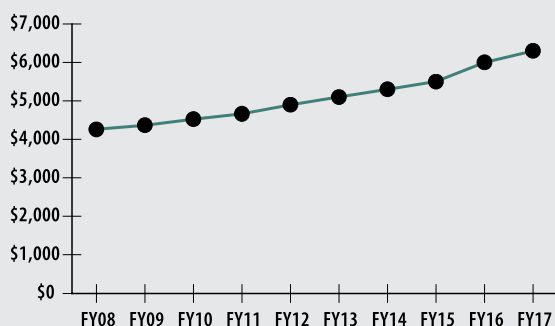
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

9.31%

31 years 2015

9.29%

30 years 2014

9.63%

10 years 2016

6.08%

10 years 2015

6.43%

10 years 2014

7.24%

5 years 2016

9.63%

5 years 2015

7.71%

5 years 2014

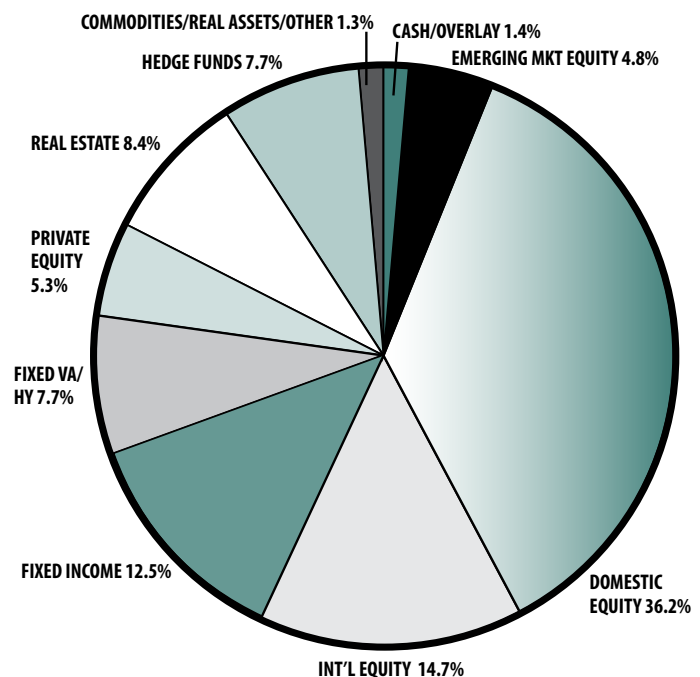
10.67%

ACTUARIAL

▶ Funded Ratio	62.9%
▶ Date of Last Valuation	01/16
▶ Actuary	Conduent
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	4.0% Increasing Phase-in
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$76.2 M
▶ Total Pension Appropriation (Fiscal 2017)	\$6.3 M

	ACTIVE	RETIRED
▶ Number of Members	573	432
▶ Total Payroll/Benefit	\$29.2 M	\$11.1 M
▶ Average Salary/Benefit	\$50,900	\$25,700
▶ Average Age	NA	74
▶ Average Service	NA	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	26
▶ Number Who Reported Earnings	10
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	9.92%
▶ 2016 Market Value	\$130.2M
▶ 2012-2016 (Annualized)	9.63%
▶ 1985-2016 (Annualized)	9.31%

Worcester

City Hall, Room 103
455 Main Street
Worcester, MA 01608
Phone 508-799-1062
Fax 508-799-1047

Board Members

Stephen F. Wentzell (Chairperson),
Elizabeth A. Early, John F. Mahan,
Robert V. Stearns, Thomas M. Wade

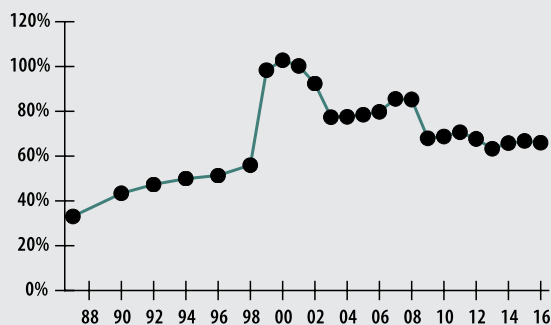
Board Administrator

Elizabeth A. Early

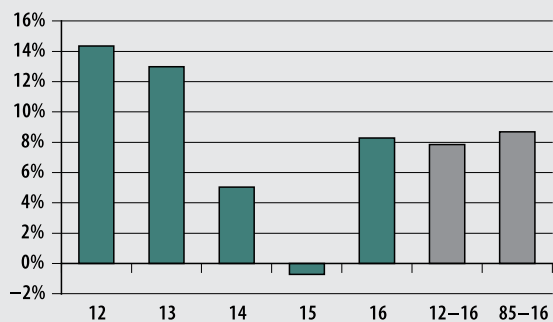
Board Meeting

Second and Third Thursday of each month

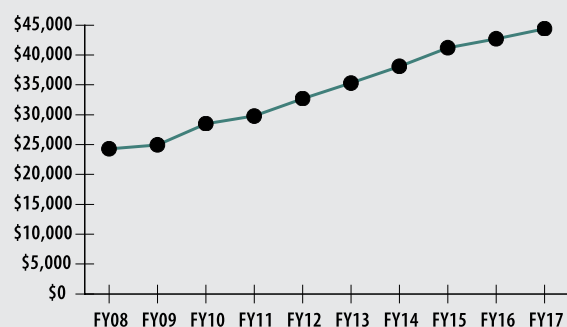
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016

8.69%

31 years 2015

8.71%

30 years 2014

9.03%

10 years 2016

4.66%

10 years 2015

5.30%

10 years 2014

6.38%

5 years 2016

7.85%

5 years 2015

6.06%

5 years 2014

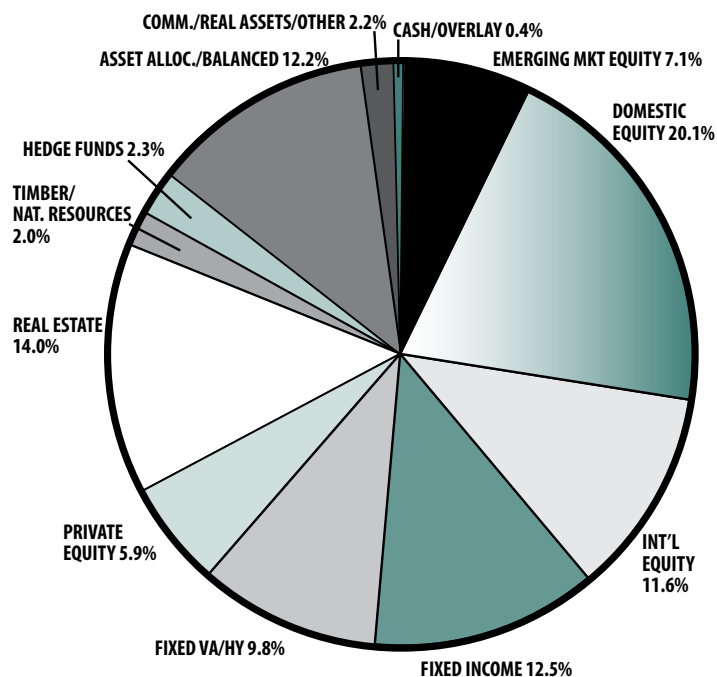
8.99%

ACTUARIAL

▶ Funded Ratio	66.0%
▶ Date of Last Valuation	01/16
▶ Actuary	The Segal Company
▶ Assumed Rate of Return	7.50%
▶ Funding Schedule	5.85% Total Increasing
▶ Year Fully Funded	2033
▶ Unfunded Liability	\$437.6 M
▶ Total Pension Appropriation (Fiscal 2017)	\$44.4 M

	ACTIVE	RETIRED
▶ Number of Members	3,275	2,722
▶ Total Payroll/Benefit	\$170.3 M	\$75.0 M
▶ Average Salary/Benefit	\$52,000	\$27,500
▶ Average Age	47	NA
▶ Average Service	13.6 years	NA

ASSET ALLOCATION (12/31/16)



EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	320
▶ Number Who Reported Earnings	70
▶ Number of Excess Earners	1
▶ Total Amount of Refund Due	\$26,496.12

▶ 2016 Return	8.29%
▶ 2016 Market Value	\$839.6M
▶ 2012-2016 (Annualized)	7.85%
▶ 1985-2016 (Annualized)	8.69%

Worcester Regional

Midstate Office Park
23 Midstate Drive, Suite 106
Auburn, MA 01501
Phone 508-832-6314
Fax 508-832-6318

Board Members

Kevin P. Blanchette (Chairperson),
Michael J. Donoghue, Eugene Durgin,
June Hubbard-Ward, Pauline Lajoie

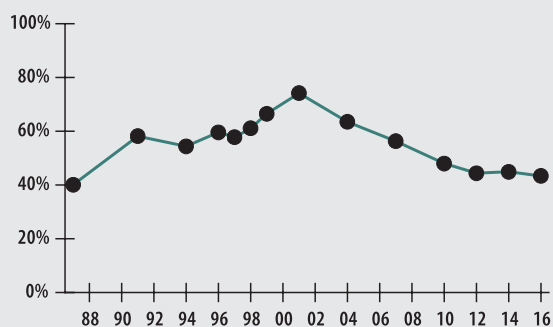
Board Administrator

Colleen M. Canty

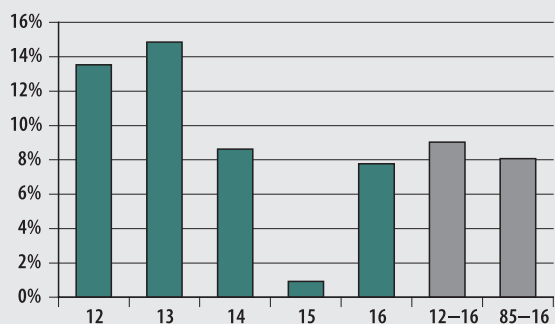
Board Meeting

Usually last Tuesday of each month

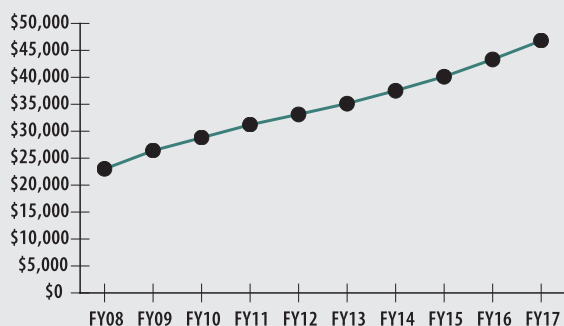
FUNDED RATIO (1987-2016)



INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



10-YEAR HISTORY OF APPROPRIATIONS (IN THOUSANDS)



INVESTMENT RETURN HISTORY

32 years 2016
8.08%

31 years 2015
8.09%

30 years 2014
8.34%

10 years 2016
4.53%

10 years 2015
5.03%

10 years 2014
5.49%

5 years 2016
9.03%

5 years 2015
7.37%

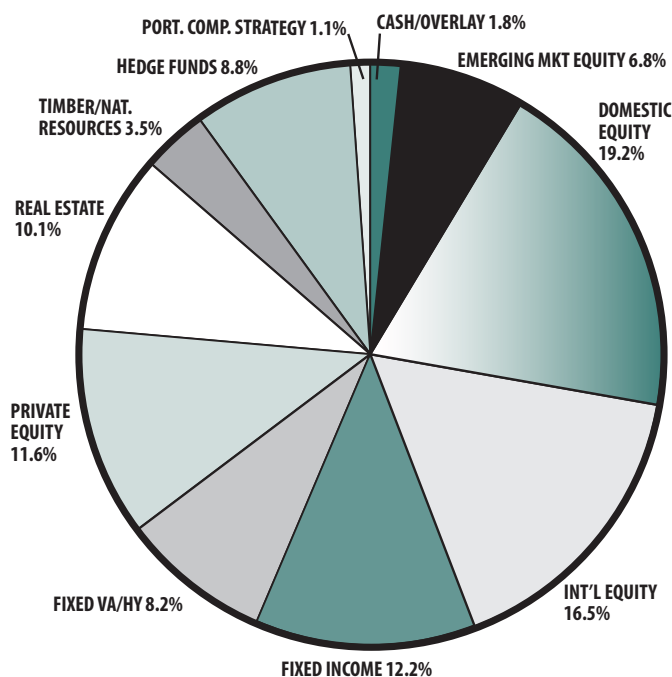
5 years 2014
9.67%

ACTUARIAL

▶ Funded Ratio	43.4%
▶ Date of Last Valuation	01/16
▶ Actuary	KMS Actuaries
▶ Assumed Rate of Return	7.75%
▶ Funding Schedule	9.95% Total Increasing
▶ Year Fully Funded	2035
▶ Unfunded Liability	\$774.6 M
▶ Total Pension Appropriation (Fiscal 2017)	\$46.8 M

	ACTIVE	RETIRED
▶ Number of Members	6,773	3,382
▶ Total Payroll/Benefit	\$282.9 M	\$66.6 M
▶ Average Salary/Benefit	\$41,800	\$19,700
▶ Average Age	48	73
▶ Average Service	10.6 years	NA

ASSET ALLOCATION (12/31/16)

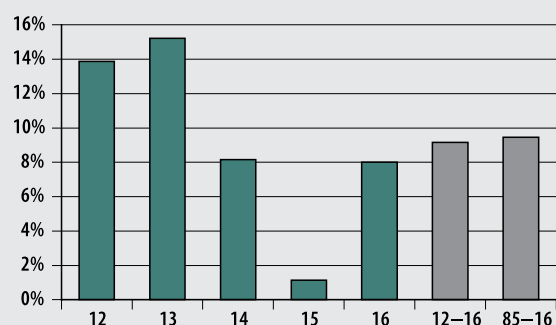


EARNED INCOME OF DISABILITY RETIREES (2015)

▶ Number of Disability Retirees	223
▶ Number Who Reported Earnings	85
▶ Number of Excess Earners	0
▶ Total Amount of Refund Due	\$0

▶ 2016 Return	7.77%
▶ 2016 Market Value	\$611.6M
▶ 2012-2016 (Annualized)	9.03%
▶ 1985-2016 (Annualized)	8.08%

INVESTMENT RETURN (2012-2016, 5 YEAR AND 32 YEAR AVERAGES)



INVESTMENT RETURN HISTORY

32 years 2016
9.45%

10 years 2016
5.04%

5 years 2016
9.17%

31 years 2015
9.49%

10 years 2015
5.86%

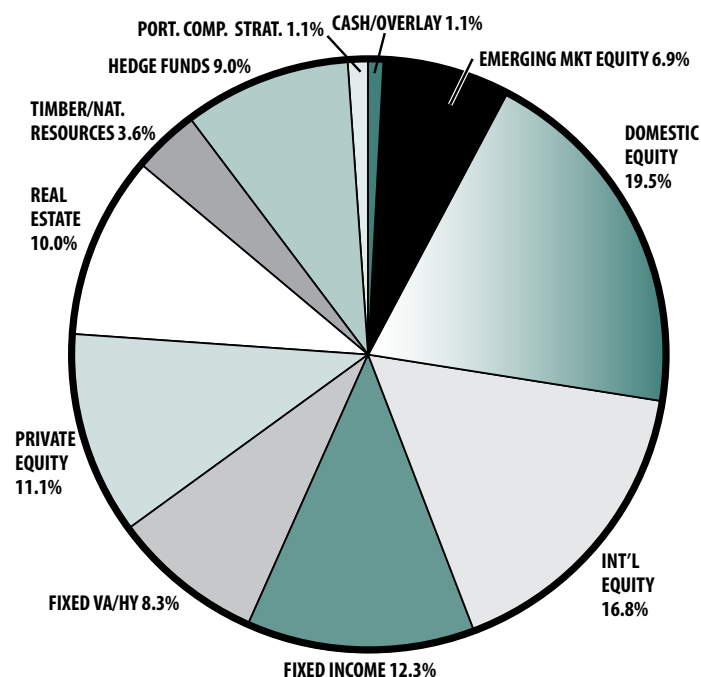
5 years 2015
7.53%

30 years 2014
9.78%

10 years 2014
7.01%

5 years 2014
10.05%

ASSET ALLOCATION (12/31/16)



▶ 2016 Return	8.02%
▶ 2016 Market Value	\$62.7B
▶ 2012-2016 (Annualized)	9.17%
▶ 1985-2016 (Annualized)	9.45%

DISABILITY

RETIREMENT STATISTICS

(as of 12/31/16)

PHYSICIAN CME/RTS REVIEWS
DISABILITY NURSE CME REVIEWS
ACCIDENTAL DEATH APPROVALS
DISABILITY RETIREMENT APPROVALS
DISABILITY PANEL REQUESTS

RETIREMENT BOARDS WITH 40–399 ACTIVE MEMBERS					
Adams Retirement Board	0	0	0	0	0
Amesbury Retirement Board	1	0	0	2	0
Blue Hills Regional School Retirement Board	0	0	0	0	0
Clinton Retirement Board	1	0	0	1	0
Easthampton Retirement Board	1	0	0	4	0
Fairhaven Retirement Board	1	0	1	0	0
Gardner Retirement Board	1	1	0	1	0
Gr. Lawrence Sanitary District Retirement Board	0	0	0	0	0
Hull Retirement Board	0	0	0	1	0
Mass Housing Finance Agency Retirement Board	0	0	0	0	0
Maynard Retirement Board	0	0	0	1	0
Milton Retirement Board	2	2	0	1	0
Minuteman Regional School District Ret. Board	0	0	0	0	0
Montague Retirement Board	0	0	0	1	0
Newburyport Retirement Board	2	0	1	1	0
North Adams Retirement Board	1	0	0	2	0
Northbridge Retirement Board	0	0	0	1	0
Reading Retirement Board	1	3	0	3	0
Saugus Retirement Board	4	3	0	1	0
Southbridge Retirement Board	2	2	0	1	0
Stoneham Retirement Board	0	0	0	0	0
Webster Retirement Board	1	1	0	0	0
Winthrop Retirement Board	0	0	0	0	0
RETIREMENT BOARDS WITH 400–599 ACTIVE MEMBERS					
Belmont Retirement Board	2	2	0	3	0
Concord Retirement Board	0	0	0	0	0
Danvers Retirement Board	1	1	0	2	0
Dedham Retirement Board	0	1	0	3	0
Gloucester Retirement Board	1	0	0	5	0
Greenfield Retirement Board	0	0	0	4	0
Marblehead Retirement Board	1	0	0	2	0
Melrose Retirement Board	1	0	0	1	0
Milford Retirement Board	0	1	0	1	1
Natick Retirement Board	0	0	1	1	0
North Attleboro Retirement Board	4	4	0	6	0
Norwood Retirement Board	3	2	0	2	1
Revere Retirement Board	4	1	0	8	0
Shrewsbury Retirement Board	1	0	0	2	0
Swampscott Retirement Board	0	0	0	1	0
Wakefield Retirement Board	1	0	0	4	0
Winchester Retirement Board	0	0	0	1	0

DISABILITY

RETIREMENT STATISTICS

(as of 12/31/16)

PHYSICIAN CME/RTS REVIEWS
DISABILITY NURSE CME REVIEWS
ACCIDENTAL DEATH APPROVALS
DISABILITY RETIREMENT APPROVALS
DISABILITY PANEL REQUESTS

RETIREMENT BOARDS WITH 600-899 ACTIVE MEMBERS					
Andover Retirement Board	0	0	0	4	0
Arlington Retirement Board	4	1	0	8	0
Attleboro Retirement Board	5	4	1	5	0
Beverly Retirement Board	2	2	0	1	0
Braintree Retirement Board	1	2	0	2	0
Chelsea Retirement Board	5	4	1	6	0
Dukes County Contributory Retirement System	4	2	0	1	0
Everett Retirement Board	2	0	1	4	0
Falmouth Retirement Board	2	0	0	2	0
Fitchburg Retirement Board	4	6	0	1	0
Hingham Retirement Board	0	0	0	0	0
Leominster Retirement Board	2	2	0	2	1
Lexington Retirement Board	2	1	0	1	0
Malden Retirement Board	4	4	0	7	0
Marlborough Retirement Board	0	0	3	4	0
Medford Retirement Board	10	4	1	8	0
Methuen Retirement Board	2	3	0	2	0
Needham Retirement Board	2	1	0	3	0
Northampton Retirement Board	2	1	0	2	0
Peabody Retirement Board	3	2	1	3	1
Watertown Retirement Board	1	0	1	9	1
Wellesley Retirement Board	1	1	1	5	0
West Springfield Retirement Board	3	3	1	5	0
Weymouth Retirement Board	7	4	0	9	0
Woburn Retirement Board	1	2	0	4	0
RETIREMENT BOARDS WITH 900-2,399 ACTIVE MEMBERS					
Berkshire County Retirement Board	2	2	0	3	0
Brockton Retirement Board	12	7	2	11	0
Brookline Retirement Board	14	11	1	12	0
Chicopee Retirement Board	7	3	1	15	0
Fall River Retirement Board	9	6	0	17	1
Framingham Retirement Board	0	0	0	6	0
Franklin County Retirement Board	2	2	0	4	0
Haverhill Retirement Board	1	3	2	8	0
Holyoke Retirement Board	5	4	2	13	0
Lawrence Retirement Board	9	3	1	4	1
Lowell Retirement Board	11	9	0	21	1
Lynn Retirement Board	7	4	0	17	1

DISABILITY

RETIREMENT STATISTICS

(as of 12/31/16)

DISABILITY RETIREMENT APPROVALS
ACCIDENTAL DEATH APPROVALS
DISABILITY NURSE CME REVIEWS
PHYSICIAN CME/RTS REVIEWS
DISABILITY PANEL REQUESTS

RETIREMENT BOARDS WITH 900-2,399 ACTIVE MEMBERS (CONT'D)					
Mass Port Authority Retirement Board	2	2	1	5	0
Mass Water Resource Authority Retirement Board	2	1	0	6	0
New Bedford Retirement Board	16	10	4	22	0
Newton Retirement Board	4	0	2	8	0
Pittsfield Retirement Board	6	3	2	7	1
Plymouth Retirement Board	9	7	2	7	0
Quincy Retirement Board	6	9	2	10	0
Salem Retirement Board	1	3	1	6	0
Somerville Retirement Board	11	6	3	4	0
Taunton Retirement Board	3	5	0	5	0
Waltham Retirement Board	3	1	0	9	0
Westfield Retirement Board	2	3	0	6	0
RETIREMENT BOARDS WITH 2,400-10,000 ACTIVE MEMBERS					
Barnstable County Board of Retirement	18	17	0	37	1
Bristol County Board of Retirement	11	9	1	19	0
Cambridge Retirement Board	14	8	3	21	0
Essex Regional Retirement Board	11	4	0	15	0
Hampden County Regional Retirement Board	6	3	0	16	0
Hampshire County Regional Retirement Board	1	1	1	7	0
Middlesex County Retirement Board	20	14	0	24	0
Norfolk County Retirement Board	13	8	0	33	0
Plymouth County Retirement Board	11	7	1	47	0
Springfield Retirement Board	18	17	2	35	1
Worcester Regional Retirement Board	16	15	3	29	0
Worcester Retirement Board	21	12	2	25	0
RETIREMENT BOARDS WITH 20,500-90,000 ACTIVE MEMBERS					
Boston Retirement Board	51	49	12	195	4
State Retirement Board	148	141	11	413	5
Teachers Retirement Board	50	17	0	49	1
TOTAL ALL RETIREMENT BOARDS:	659	499	76	1356	22

RESTORATION TO SERVICE STATISTICS *(Provided for those boards where a disability retiree has returned to work.)*

New Bedford Retirement Board (1)

Pittsfield Retirement Board (1)

Barnstable County Retirement Board (1)

INVESTMENT VENDORS

- The following is a listing of the investment managers, custodians, and consultants that serve the Massachusetts public pension systems. The listing is based on information supplied by the retirement boards.

RETIREMENT BOARD	INVESTMENT VENDORS		
ADAMS ► Custodian: State Street Bank & Trust ► Consultant: Fiduciary Investment Advisors	<ul style="list-style-type: none"> Capital Research and Management 	<ul style="list-style-type: none"> Granite Investment Advisors 	
AMESBURY	<ul style="list-style-type: none"> PRIT 		
ANDOVER ► Consultant: Dahab Associates	<ul style="list-style-type: none"> PRIT 		
ARLINGTON ► Custodian: State Street Bank & Trust	<ul style="list-style-type: none"> PRIT 	<ul style="list-style-type: none"> Wilshire Associates Inc. 	
ATTLEBORO ► Custodian: People's United Bank ► Consultant: Dahab Associates Inc.	<ul style="list-style-type: none"> Boston Advisors, LLC BTG Pactual Timberland Investment Group Daruma Capital Management, LLC Fidelity Institutional Asset Management Frontier Capital Management Co., LLC 	<ul style="list-style-type: none"> Hancock Timber Resource Group, Inc. Herndon Capital Management, LLC Intercontinental Real Estate Corp. Invesco Core Real Estate USA, LP Invesco National Trust Company 	<ul style="list-style-type: none"> Orleans Capital Management Corp. PRIT RhumblLine Advisers State Street Global Advisors Wells Capital Management Inc.
BARNSTABLE COUNTY	<ul style="list-style-type: none"> Intercontinental Capital Management, LLC 	<ul style="list-style-type: none"> PRIT 	<ul style="list-style-type: none"> UBS Realty Investors, LLC
BELMONT ► Custodian: State Street Bank & Trust ► Consultant: New England Pension Consultants	<ul style="list-style-type: none"> AEW Capital Management, LP Atlanta Capital Harbourvest Partners, LLC 	<ul style="list-style-type: none"> Loomis Sayles & Company Pacific Investment Management Company, LLC PRIT 	<ul style="list-style-type: none"> RhumblLine Advisers Rothschild Asset Management Inc. Scout Capital Management, LLC
BERKSHIRE COUNTY	<ul style="list-style-type: none"> PRIT 		
BEVERLY	<ul style="list-style-type: none"> PRIT 		
BLUE HILLS REGIONAL	<ul style="list-style-type: none"> PRIT 		
BOSTON (CITY) ► Custodian: State Street Bank & Trust ► Consultant: New England Pension Consultants	<ul style="list-style-type: none"> 57 Stars, LLC AEW Capital Management, LP Alcentra NY, LLC Angelo, Gordon & Co., LP Ardlight Capital Partners, LLC Aristotle Capital Management, LLC Arsenal Real Estate Funds, LLC Ascent Venture Partners Audax Group AXA Real Estate Investment Managers Ltd. Bernzott Capital Advisors BlackRock Advisors, LLC Blue Point Capital Partners, LLC Boston Millennia Partners Brookfield Asset Management CCMP Capital Advisors, LLC Centersquare Investment Management Holdings, Inc. Columbia Management Investment Advisors, LLC Commonwealth Capital Ventures Courtland Partners Crescent Capital Group, LP DDJ Capital Management D.E. Shaw Investment Management, LLC DRC Capital, LLP Dune Capital Management, LP Energy Spectrum Partners EnTrust Partners, LLC Evercore Advisors, LLC 	<ul style="list-style-type: none"> Federal Street Partners, LLC Fisher Investments GAM USA, Inc. Goldentree Asset Management, LP Grosvenor Capital Management, LP Hamilton Lane Hearthstone Inc. Income Research + Management Intech Intercontinental Real Estate Corp. Invesco Core Real Estate USA, LP J.F. Lehman & Company, Inc. J.P. Morgan Investment Management, Inc. J.W. Childs Associates, LP LaSalle Investment Management, Inc. Lazard Asset Management, LLC Lexington Partners, LP Loomis Sayles & Company Mesirow Advanced Strategies, Inc. Mesirow Financial Investment Management, Inc. MPM Capital, LP NGP Energy Capital Management, LLC Oaktree Capital Management, LP PanAgora Asset Management, Inc. Pearlmark Investment Advisors, LLC Perella Weinberg Partners Capital Management, LP Permal Asset Management, Inc. Polunin Capital Partners 	<ul style="list-style-type: none"> Prudential Capital Partners RhumblLine Advisers Richmond Capital Management, Inc. Sanderling Ventures SCP Private Equity Partners Siguler Guff Advisers, LLC SL Capital Partners State Street Global Advisors Sterling Venture Partners, LLC TA Realty TH Lee Putnam Ventures The Davis Companies Thomas H. Lee Partners, LP Thoma Bravo, LLC Thomas Weisel Global Growth Partners, LLC Todd Asset Management Tristan Capital Partners Vanguard Venture Partners, LLC Vontobel Asset Management, Inc. W Capital Partners Wells Capital Management, Inc. Western Technology Westfield Capital Management Company, LP Westport Capital Partners, LLC Z Capital Partners, LLC Zevenbergen Capital Investments, LLC

RETIREMENT BOARD		INVESTMENT VENDORS	
BOSTON TEACHERS	<ul style="list-style-type: none"> • PRIT 		
BRAINTREE ▶ Custodian: SEI Private Trust Company	<ul style="list-style-type: none"> • Acadian Asset Management, LLC • Lexington Partners, LP • Loomis Sayles & Company 	<ul style="list-style-type: none"> • Massachusetts Financial Services Company • Pictet Asset Management 	<ul style="list-style-type: none"> • PRIT • RhumbLine Advisers • SEI Investments Management Corporation
BRISTOL COUNTY ▶ Custodian: State Street Bank & Trust ▶ Consultant: Segal Marco Advisors	<ul style="list-style-type: none"> • Aberdeen Asset Management • Arrowstreet Capital, LP • Ashmore Investment Advisors, Ltd. • BlackRock Investment Management, LLC • Brookfield Timberlands Management, LP • CB Richard Ellis Group, Inc. • Colchester Global Investors • Columbia Management Investment Advisers, LLC • DN Partners • Dupont Capital Management • Earnest Partners, LLC • GCM Customized Fund Investment Group 	<ul style="list-style-type: none"> • Hunt Investment Management, LLC • Income Research & Management • Intech • Intercontinental Real Estate Corp. • Invesco Advisers, Inc. • Lazard Asset Management, LLC • LSV Asset Management • Lyrical Asset Management, LP • Massachusetts Financial Services Company • Mesirow Financial Private Equity Advisors, Inc. • New Boston Fund, Inc. 	<ul style="list-style-type: none"> • Pacific Investment Management Company, LLC • Polaris Capital Management, LLC • PRIT • RBC Global Asset Management (U.S.), Inc. • Rice Hall James & Associates, LLC • RREEF Management, LLC • SEI Trust Company • Stone Harbor Investment Partners • TA Realty • Timberland Investment Resources, LLC • WL Ross & Co., LLC
BROCKTON ▶ Custodian: SEI Private Trust Company	<ul style="list-style-type: none"> • Aberdeen Asset Management • Arsenal Real Estate Partners • Ascent Venture Partners • Boston Capital Ventures • Charlesbank Capital Partners, LLC • HealthPoint, LLC 	<ul style="list-style-type: none"> • Hunt Investment Management, LLC • Intercontinental Capital Management, LLC • Invesco Private Capital, Inc. • Landmark Partners, LLC • Mesirow Financial Investment Management, Inc. 	<ul style="list-style-type: none"> • New Boston Fund, Inc. • New England Capital Partners • Oppenheimer Alternative Investment Management • SEI Investments Management Corp. • Siguler Guff Advisers, LLC
BROOKLINE ▶ Custodian: Russell Investments	<ul style="list-style-type: none"> • AEW Capital Management, LP • Hancock Timber Resource Group, Inc. • HarbourVest Partners, LLC 	<ul style="list-style-type: none"> • Invesco Private Capital, Inc. • Lexington Partners, LP • PRIT 	<ul style="list-style-type: none"> • Russell Investment Group • Sustainable Woodlands Partners, LLC
CAMBRIDGE ▶ Custodian: People's United Bank ▶ Consultant: Segal Marco Advisors	<ul style="list-style-type: none"> • Aberdeen Asset Management • AEW Capital Management, LP • Ascent Venture Partners • BlackRock Investment Management, LLC • Brandywine Global Investment Management, LLC • Columbia Management Investment Advisers, LLC • Fidelity Institutional Asset Management • Hamilton Lane • Hancock Timber Resource Group, Inc. • IFM Investors (US) Advisor 	<ul style="list-style-type: none"> • Income Research & Management • Intercontinental Real Estate Corp. • Invesco Core Real Estate USA, LP • J.P. Morgan Investment Management • Landmark Partners, LLC • Lazard Asset Management, LLC • Lexington Partners, LP • Loomis Sayles & Co. • MacKay Shields, LLC • MFS Institutional Advisors, Inc. 	<ul style="list-style-type: none"> • Penn Square Global Real Estate Group, LLC • Polaris Capital Management, LLC • PRIT • RBC Global Asset Management (U.S.), Inc. • RhumbLine Advisers • Rockwood Capital, LLC • State Street Global Advisors • UBS Realty Advisors, LLC • WEDGE Capital Management, LLP • Wellington Management Company
CHELSEA	<ul style="list-style-type: none"> • PRIT 		
CHICOPEE ▶ Custodian: SEI Private Trust Company	<ul style="list-style-type: none"> • PRIT 	<ul style="list-style-type: none"> • SEI Investments Management Corp. 	
CLINTON ▶ Consultant: Trust Advisory Group, Ltd.	<ul style="list-style-type: none"> • PRIT 		
CONCORD ▶ Custodian: Comerica Securities	<ul style="list-style-type: none"> • Columbia Threadneedle Investments 	<ul style="list-style-type: none"> • PRIT 	<ul style="list-style-type: none"> • Russell Investment Group
DANVERS ▶ Custodian: Comerica ▶ Consultant: Graystone Consulting	<ul style="list-style-type: none"> • Barings, LLC • Dalton, Greiner, Hartman, Maher & Co., LLC • Equus Capital Partners, Ltd. • Fidelity Investments Money Management, Inc. • Gerber-Taylor Management Company 	<ul style="list-style-type: none"> • Longfellow Investment Management Co., LLC • Lyrical Asset Management • Manulife Asset Management • Mount Lucas Management, LP • PRIT 	<ul style="list-style-type: none"> • RhumbLine Advisers • Shafer Cullen • Shenkman Capital Management, Inc. • TA Realty • TWIN Capital Management

RETIREMENT BOARD	INVESTMENT VENDORS		
DEDHAM	<ul style="list-style-type: none"> PRIT 		
DUKES COUNTY ▶ Custodian: State Street Bank & Trust ▶ Consultant: Dahab Associates, Inc.	<ul style="list-style-type: none"> Atlanta Capital Garcia Hamilton & Associates LP 	<ul style="list-style-type: none"> Polen Capital Management, LLC PRIT 	<ul style="list-style-type: none"> Vanguard
EASTHAMPTON	<ul style="list-style-type: none"> PRIT 		
ESSEX COUNTY ▶ Custodian: State Street Bank & Trust ▶ Consultant: Dahab Associates, Inc.	<ul style="list-style-type: none"> Ascent Venture Partners BlackRock Investment Management, LLC Boston Millennia Partners Intercontinental Real Estate Corp. 	<ul style="list-style-type: none"> Levine Leichtman Capital Partners, Inc.. MassVentures PRIT 	<ul style="list-style-type: none"> Principal Real Estate Investors, LLC Sentinel Real Estate Corporation TA Realty
EVERETT	<ul style="list-style-type: none"> PRIT 		
FAIRHAVEN	<ul style="list-style-type: none"> PRIT 		
FALL RIVER	<ul style="list-style-type: none"> PRIT 	<ul style="list-style-type: none"> SL Capital Partners, LLP 	
FALMOUTH ▶ Custodian: State Street Bank & Trust ▶ Consultant: Wainwright Investment Counsel, LLC	<ul style="list-style-type: none"> Baring Asset Management (Asia) Limited Denver Investments Dimensional Fund Advisors, LP Earnest Partners, LLC HGK Asset Management, Inc. Intercontinental Real Estate Corp. 	<ul style="list-style-type: none"> Invesco Private Capital, Inc. Lexington Partners, LP LMCG Investments, LLC Mesirow Financial Private Equity Advisors, Inc. Metropolitan Real Estate Equity Management, LLC PRIT 	<ul style="list-style-type: none"> Principal Real Estate Investors, LLC RhumbLine Advisers SEI Trust Company Seizert Capital Partners, LLC Siguler Guff Advisers, LLC State Street Global Advisors
FITCHBURG	<ul style="list-style-type: none"> PRIT 	<ul style="list-style-type: none"> TA Realty 	
FRAMINGHAM	<ul style="list-style-type: none"> PRIT 		
FRANKLIN COUNTY ▶ Custodian: Comerica Bank ▶ Consultant: Dahab Associates, Inc.	<ul style="list-style-type: none"> Daruma Capital Management, LLC Income Research & Management O'Shaughnessy Asset Management, LLC 	<ul style="list-style-type: none"> Polen Capital Management, LLC PRIT 	<ul style="list-style-type: none"> Seizert Capital Partners, LLC Systematic Financial Management, LP
GARDNER	<ul style="list-style-type: none"> PRIT 		
GLOUCESTER	<ul style="list-style-type: none"> PRIT 		
GREATER LAWRENCE ▶ Custodian: BNY Mellon Asset Servicing	<ul style="list-style-type: none"> Seaward Management 		
GREENFIELD	<ul style="list-style-type: none"> PRIT 		
HAMPDEN COUNTY REGIONAL ▶ Consultant: Segal Marco Advisors	<ul style="list-style-type: none"> GCM Customized Fund Investment Group Long Wharf Real Estate Partners, LLC 	<ul style="list-style-type: none"> New Boston Fund, Inc. 	<ul style="list-style-type: none"> PRIT
HAMPSHIRE COUNTY ▶ Consultant: New England Pension Consultants	<ul style="list-style-type: none"> Ascent Venture Partners Barings LLC Colchester Global Investors Glouston Capital Partners, LLC Intercontinental Real Estate Corp. 	<ul style="list-style-type: none"> Lexington Partners, LP Massachusetts Financial Services Company Mellon Capital Management Corporation Perella Weinberg Partners Capital Management, LP Polaris Capital Management, LLC 	<ul style="list-style-type: none"> Portfolio Advisors, LLC PRIT RBC Global Asset Management (U.S.) Inc. RhumbLine Advisers Shenkman Capital Management, Inc.

RETIREMENT BOARD		INVESTMENT VENDORS		
HAVERHILL ▶ Custodian: People's United Bank ▶ Consultant: Wainwright Investment Counsel, LLC	<ul style="list-style-type: none"> • DDJ Capital Management, LLC • Fisher Investments • Global Forest Partners, LP • Globespan Capital Management, Inc. • GrandBanks Capital • Income Research + Management • Intercontinental Real Estate Corporation 	<ul style="list-style-type: none"> • Massachusetts Financial Services Company • Mesirow Financial Institutional Real Estate • Molpus Woodlands Group, LLC • PRIT • Putnam Investment Management, LLC • RhumbLine Advisers 	<ul style="list-style-type: none"> • Stafford Private Equity, Inc. • Systematic Financial Management, LP • TerraCap Management • TH Lee Partners • The DSF Group • Victory Capital Management 	
HINGHAM ▶ Consultant: Meketa Investment Group	<ul style="list-style-type: none"> • PRIT 			
HOLYOKE ▶ Consultant: Segal Marco Advisors	<ul style="list-style-type: none"> • American Realty Advisors • Boston Company Asset Management, LLC • Brandywine Global Investment Management, LLC • Charles Schwab & Co., Inc. • Constitution Capital Partners, LLC • Denver Investments • Fidelity Institutional Asset Management • Flynn Financial Partners • Industry Capital Advisors, LLC 	<ul style="list-style-type: none"> • Intercontinental Real Estate Corporation • Invesco Core Real Estate USA, LP • Invesco Trust Company • Lazard Asset Management, LLC • Long Wharf Real Estate Partners, LLC • Mesirow Financial Private Equity Advisors, Inc. • Oberweis Asset Management, Inc. • OFI Global Institutional, Inc. • Polaris Capital Management, LLC 	<ul style="list-style-type: none"> • PRIT • Putnam Investment Management, LLC • RBC Global Asset Management (U.S.) Inc. • Seizert Capital Partners, LLC • State Street Global Advisors • TA Realty • TerraCap Management • Wasatch Advisors, Inc. 	
HULL	<ul style="list-style-type: none"> • PRIT 			
LAWRENCE	<ul style="list-style-type: none"> • PRIT 			
LEOMINSTER ▶ Custodian: State Street Bank & Trust	<ul style="list-style-type: none"> • Massachusetts Financial Services Company • PRIT 	<ul style="list-style-type: none"> • Templeton Investment Counsel 	<ul style="list-style-type: none"> • Union Labor Life Insurance Company 	
LEXINGTON ▶ Custodian: State Street Bank & Trust ▶ Consultant: Meketa Investment Group, Inc.	<ul style="list-style-type: none"> • Acadian Asset Management, LLC • Beacon Capital Partners, LLC • Fidelity Investments • Fiduciary Management, Inc. • Golub Capital Partners 	<ul style="list-style-type: none"> • Hartford Investment Management Company • Kayne Anderson Rudnick Investment Management • Loomis Sayles & Company • Matthews International Capital Management, LLC • Monroe Capital 	<ul style="list-style-type: none"> • PRIT • RhumbLine Advisers • Wellington Management Company, LLP • White Oak Global Advisors, LLC • William Blair & Company, LLC 	
LOWELL ▶ Custodian: People's United Bank	<ul style="list-style-type: none"> • Ascent Venture Partners • Boston Millennia Partners • Charles River Ventures 	<ul style="list-style-type: none"> • Intercontinental Real Estate Corporation • PRIT 	<ul style="list-style-type: none"> • QCI Asset Management • Sentinel Real Estate Corporation 	
LYNN	<ul style="list-style-type: none"> • Ascent Venture Partners • BlackRock Investment Management, LLC 	<ul style="list-style-type: none"> • BlackRock Realty Advisors, Inc. • Fidelity Investments Money Management, Inc. 	<ul style="list-style-type: none"> • Hunt Investment Management, LLC • PRIT 	
MHFA ▶ Custodian: State Street Bank & Trust ▶ Consultant: Meketa Investment Group, Inc.	<ul style="list-style-type: none"> • Aberdeen Asset Management • AEW Capital Management, LP • Ascent Venture Partners • Columbia Management Investment Advisers, LLC • Constitution Capital Partners, LLC • Dimensional Fund Advisors, LP 	<ul style="list-style-type: none"> • Goldman Sachs Asset Management, LP • HarbourVest Partners, LLC • Intercontinental Real Estate Corporation • KBI Global Investors (North America) Ltd. • LMCG Investments, LLC • Logan Circle Partners, LP 	<ul style="list-style-type: none"> • McDonnell Investment Management, LLC • RS Investment Management Company, LLC • State Street Global Advisors • Stone Harbor Investment Partners, LP • TA Realty 	
MWRA ▶ Custodian: People's United Bank ▶ Consultant: New England Pension Consultants	<ul style="list-style-type: none"> • Alcentra NY, LLC • Ascent Venture Partners • Boston Company Asset Management, LLC • Castile Ventures • Cerberus Capital Management, LP • Coho Partners, Ltd. • Courtland Partners • Entrust Partners, LLC • Foundry Group, LLP • Intercontinental Real Estate Corporation • Invesco Trust Company • Invesco Private Capital, Inc. • J.F. Lehman & Company 	<ul style="list-style-type: none"> • Kayne Anderson Capital Advisors, LP • Landmark Partners, LLC • Lee Munder Capital Group, LLC • Loomis Sayles & Company • Mesirow Financial Institutional Real Estate • MFS Institutional Advisors, Inc. • Morgan Stanley • Pacific Investment Management Company, LLC • Permal Asset Management, Inc. • Pinebridge Investments, LLC • Polen Capital Management, LLC • PRIT 	<ul style="list-style-type: none"> • Private Advisors, LLC • RhumbLine Advisers • Robeco Institutional Asset Management U.S., Inc. • Schroders Investment Management North America, Inc. • SEI Trust Corporation • Select Equity Group, LP • TA Realty • TerraCap Management • Wellington Management Company, LLP • William Blair & Company, LLC • WL Ross & Co., LLC 	

RETIREMENT BOARD	INVESTMENT VENDORS		
MALDEN ► Custodian: State Street Bank & Trust	<ul style="list-style-type: none"> De Burlo Group, Inc. 		
MARBLEHEAD	<ul style="list-style-type: none"> PRIT 		
MARLBOROUGH ► Custodian: Comerica Bank ► Consultant: Meketa Investment Group, Inc.	<ul style="list-style-type: none"> Clarion Partners Colony Realty Partners Constitution Capital Partners, LLC Dimensional Fund Advisors LP 	<ul style="list-style-type: none"> Driehaus Capital Management, LLC Fiduciary Management, Inc. Frontier Capital Management Co., LLC Payden & Rygel 	<ul style="list-style-type: none"> RhumbLine Advisers Shenkman Capital Management, Inc. SL Capital Partners, LLP State Street Global Advisors
MASSPORT ► Custodian: People's United Bank ► Consultant: Wilshire Associates	<ul style="list-style-type: none"> Aberdeen Asset Management, Inc. PRIT 	<ul style="list-style-type: none"> Pzena Investment Management, LLC State Street Global Advisors 	<ul style="list-style-type: none"> Wellington Management Company, LLP
MAYNARD ► Custodian: State Street Bank & Trust	<ul style="list-style-type: none"> Boston Advisors, LLC 	<ul style="list-style-type: none"> PRIT 	<ul style="list-style-type: none"> Sequin Partners, LLC
MEDFORD ► Custodian: State Street Bank & Trust ► Consultant: New England Pension Consultants	<ul style="list-style-type: none"> Columbia Management Investment Advisors, LLC Lazard Asset Management, LLC Loomis Sayles & Company 	<ul style="list-style-type: none"> Mellon Capital Management Corporation PRIT RhumbLine Advisers 	<ul style="list-style-type: none"> Standard Life Investment Western Asset Management Company William Blair & Company, LLC
MELROSE	<ul style="list-style-type: none"> Ascent Venture Partners Hunt Investment Management, LLC 	<ul style="list-style-type: none"> Intercontinental Real Estate Corporation Invesco Private Capital, Inc. 	<ul style="list-style-type: none"> PRIT TA Realty
METHUEN	<ul style="list-style-type: none"> BlackRock Investment Management, LLC 	<ul style="list-style-type: none"> PRIT 	<ul style="list-style-type: none"> Sentinel Real Estate Corporation
MIDDLESEX COUNTY ► Custodian: State Street Bank & Trust	<ul style="list-style-type: none"> Ares Management, LLC Ascent Venture Partners Auda Private Equity, LLC Boston Millennia Partners 	<ul style="list-style-type: none"> Duke Street Capital Global Forest Partners, LP Globespan Capital Management, Inc. Hunt Investment Management, LLC 	<ul style="list-style-type: none"> Intercontinental Real Estate Corporation Invesco Private Capital, Inc. PRIT TH Lee Partners
MILFORD	<ul style="list-style-type: none"> PRIT 		
MILTON	<ul style="list-style-type: none"> PRIT 		
MINUTEMAN REGIONAL	<ul style="list-style-type: none"> PRIT 		
MONTAGUE	<ul style="list-style-type: none"> PRIT 		
NATICK ► Custodian: People's United Bank ► Consultant: Fiduciary Investment Advisors, LLC	<ul style="list-style-type: none"> Intercontinental Real Estate Corporation PRIT 	<ul style="list-style-type: none"> SEI Investments Management Corp. 	<ul style="list-style-type: none"> Sentinel Real Estate Corporation SL Capital Partners, LLP
NEEDHAM	<ul style="list-style-type: none"> PRIT 		
NEW BEDFORD ► Custodian: State Street Bank & Trust ► Consultant: Segal Marco Advisors	<ul style="list-style-type: none"> Aberdeen Asset Management, Inc. Acadian Asset Management, LLC Blackrock Realty Advisors, Inc. Boston Company Asset Management, LLC Hamilton Lane Hunt Investment Management, LLC Invesco Private Capital, Inc. 	<ul style="list-style-type: none"> Lexington Advisors, Inc. Loomis Sayles & Company Mesirow Private Equity Advisors, Inc. Neuberger Berman Management Pacific Investment Management Company, LLC SEI Trust Company 	<ul style="list-style-type: none"> State Street Global Advisors Limited TA Realty UBS Realty Investors, LLC Wellington Management Company, LLP Westfield Capital Management Company, LP Wilton Asset Management, LLC

RETIREMENT BOARD	INVESTMENT VENDORS		
NEWBURYPORT	<ul style="list-style-type: none"> • PRIT 		
NEWTON	<ul style="list-style-type: none"> • PRIT 		
NORFOLK COUNTY ▶ Custodian: State Street Bank & Trust ▶ Consultant: Wainwright Investment Counsel, LLP	<ul style="list-style-type: none"> • AGF Investments America • Allianz Global Investors Fund Management, LLC • ArcLight Capital Partners, LLC • Ariel Investments • Ascend Ventures Group, LLC • Boston Millennia Partners • Centersquare Investment Management Holdings, Inc. • Centre Lane Partners, LLC • CHL Medical Partners • Clarion Partners • Collier Investment Management, Ltd. • Constitution Capital Partners, LLC • Corsair Capital LLC • D.E. Shaw Investment Management, LLC • Denver Investments • DSF Group • EnTrust Partners, LLC • Gamco Asset Management, Inc. 	<ul style="list-style-type: none"> • Gerding Edlen Investment Management, LLC • Globespan Capital Management, Inc. • Goldentree Asset Management, LP • Halpern, Denny & Company • Hamilton Lane • HarbourVest Partners, LLC • Hunt Investment Management, LLC • Income Research & Management • Intercontinental Real Estate Corporation • Invesco Private Capital, Inc. • Lazard Asset Management, LLC • Lee Munder Capital Group, LLC • LLM Capital Partners • Loomis, Sayles & Company • Mesirow Capital Partners X, LP • Mesirow Financial Institutional Real Estate • MFS International Advisors, Inc. • Monitor Venture Management 	<ul style="list-style-type: none"> • Northern Trust • Preferred Investors • PRIT • PRISM Venture Partners • Putnam Investment Management, LLC • RhumbLine Advisers • Seizert Capital Partners, LLC • Sentinel Real Estate Corporation • Siguler Guff Advisors, LLC • SL Capital Partners, LLP • State Street Global Advisors • TA Realty • TerraCap Management • Victory Capital Management • Wellesley Advisors Corporation • Wellington Management Company, LLP • Wells Capital Management, Inc. • Wilshire Associates, Inc.
NORTH ADAMS ▶ Custodian: State Street Bank & Trust	<ul style="list-style-type: none"> • De Burlo Group, Inc. 	<ul style="list-style-type: none"> • PRIT 	
NORTH ATTLEBORO ▶ Custodian: State Street Bank & Trust ▶ Consultant: Dahab Associates, Inc.	<ul style="list-style-type: none"> • AmSouth Bank • Atlanta Capital • Axiom International Investors, LLC • Blackrock Realty Advisors, Inc. • Brandes Investment Partners, LP 	<ul style="list-style-type: none"> • Chicago Equity Partners, LLC • Davenport & Company, LLC • Herndon Capital Management, LLC • Intercontinental Real Estate Corporation • Lazard Asset Management, LLC 	<ul style="list-style-type: none"> • Loomis Sayles & Company • RhumbLine Advisers • Stewart Capital Advisors, LLC • Vontobel Asset Management, Inc.
NORTHAMPTON ▶ Custodian: State Street Bank & Trust	<ul style="list-style-type: none"> • De Burlo Group, Inc. 	<ul style="list-style-type: none"> • PRIT 	
NORTHBRIDGE	<ul style="list-style-type: none"> • PRIT 		
NORWOOD ▶ Custodian: State Street Bank & Trust ▶ Consultant: Meketa Investment Group, Inc.	<ul style="list-style-type: none"> • Aberdeen Asset Management, Inc. • American Funds • Atlanta Capital • Boston Company Asset Management, LLC 	<ul style="list-style-type: none"> • Columbia Management Investment Advisors, LLC • Constitution Capital Partners • Dimensional Fund Advisors, LP • HarbourVest Partners, LLC 	<ul style="list-style-type: none"> • Landmark Partners, LLC • Oaktree Capital Management, LP • PRIT • RhumbLine Advisers
PEABODY	<ul style="list-style-type: none"> • PRIT 		
PITTSFIELD ▶ Consultant: Fiduciary Investment Advisors, LLC	<ul style="list-style-type: none"> • Hunt Investment Management, LLC • PRIT 	<ul style="list-style-type: none"> • Sentinel Real Estate Corporation 	<ul style="list-style-type: none"> • SL Capital Partners, LLP
PLYMOUTH ▶ Custodian: People's United Bank ▶ Consultant: Fiduciary Investment Advisors, LLC	<ul style="list-style-type: none"> • Acadian Asset Management • Babson Capital Management • Blackrock Kelso Capital Advisors, LLC • Boston Advisors, LLC • Boston Trust Investment Management, Inc. 	<ul style="list-style-type: none"> • Intercontinental Real Estate Corporation • Invesco Advisors, Inc. • Invesco Trust Company • PRIT • Rhumbline Advisers 	<ul style="list-style-type: none"> • Robeco Institutional Asset Management U.S., Inc. • Templeton Investment Counsel • Wellington Management Company, LLP • Westfield Capital Management Company, LP

RETIREMENT BOARD	INVESTMENT VENDORS		
<p>PRIM</p> <p>► Custodian: BNY Mellon</p> <p>► Consultants: Arden Asset Management LLC, Callan Associates, Hamilton Lane, NEPC, Townsend</p>	<ul style="list-style-type: none"> • 1818 Fund • 400 Capital Management • Acadian Asset Management, LLC • Access Capital • Acon Investments • Advent International • AEW Capital Management • AFL-CIO Housing Investment Trust • Alchemy Partners • Alta Communications • American Securities Capital Partners • Anchorage Capital, LLC • Angelo Gordon • APAX Partners & Co. • Apollo Management Co. • AQR Capital • Arden Asset Management • Arrowgrass G.P. Limited • Ascent Venture Partners • Ashmore Investment Management, Ltd. • Asia Pacific Trust • Austin Ventures • Avenue Capital Group • Baillie Gifford • Bain Capital • Battery Ventures • Belmont Capital Partners • Berkshire Partners • Blackrock Financial Management, Inc. • Blackstone Capital Partners • Blackstone Group • Boston Ventures • Brevan Howard G.P. Limited • Bridgepoint Capital Limited • Brigade Capital G.P., LLC • Brookfield Investment Management • Campbell Group, LLC • Candover • Cantab Capital Partners, LP • Canyon Johnson II • Capital Resource Lenders • Capula Management Limited • Carlyle Group • Carlyle Partners • Castille • Catalyst Investors • Centerbridge • Centerbridge Special Credit Partners • CenterSquare Investment Management • Charlesbank Capital Partners • Charles River Ventures • Charterhouse Group • Chequers • City of London Investment Management Co. • Claren Road Capital, LLC • Clifton Group • Code, Hennessey & Simmons • Commonwealth Capital Ventures • Community Capital Management • Crescent Capital Group • Crossroads Group • CSFB Private Equity (DLJ Merchant Banking Partners) • CVC Capital • Cypress Merchant Banking Partners • Davidson Kempner Advisors, Inc. • Denham Capital Management 	<ul style="list-style-type: none"> • DivcoWest • Driehaus Capital Management, LLC • East Lodge Capital • Eaton Vance Institutional Funds • El Dorado Ventures • Elliot Capital Advisors, LP • Equitable Capital Management Corporation • Essex Woodlands Health Ventures • Ethos Private Equity • Exponent Private Equity Partners • Fidelity Management Trust Company • FIS Group, Inc. • First Reserve Corporation • Flagship Ventures • Forest Investment Associates • Frontier Capital Management • Freeman Spogli Equity Partners • GENSTAR Capital • Gilde Buy Out Partners AG • Glenview Capital G.P., LLC • Goldman Sachs Investment Management • Gores Capital • GSO Capital Partners • GTCR Golder Rauner • Harbourvest Partners • Harding Loevner • Hellman & Friedman Capital Partners • H.I.G. Capital Partners • Highfields Associates, LLC • Highland Capital Partners • Hony Capital • Huber Capital • Index Ventures • Insight Venture Partners • Intercontinental IV • InterWest Partners • Invesco Realty Advisors • Investec Asset Management • Joseph Littlejohn & Levy Fund • J.P. Morgan Investment Management • Kelso & Company • Kepha Partners • Keytone Ventures • King Street Capital Management • Kohlberg Kravis Roberts and Co. • KPS Capital Partners • Landmark Equity Partners • LaSalle Investment Management • LMCG Investments • Loomis, Sayles & Company • Madison Dearborn Capital Partners • Marathon — London • M/C Venture Partners • Menlo Ventures • MFA Partners APA German European Ventures • Mondrian Investment Partners Ltd. • Montagu • Montreux Equity Partners • Mudrick Capital Management, LP • Nash & Sells • Nautic Partners • New Boston Urban Fund I • New Enterprise Associates • Nordic Capital • Oaktree Capital Management 	<ul style="list-style-type: none"> • Odyssey Investment Partners • Olympus Partners • Onex Capital Partners • OZ Advisors, LP • Pacific Alternative Asset Management Co. (PAAMCO) • Pacific Investment Management Co. (PIMCO) • PAI Europe • PanAgora Asset Management, Inc. • Permira Ventures • Pershing Square G.P., LLC • Pictet Asset Management, Inc. • Polaris Venture Partners • Presima • Providence Equity Partners • Pzena Investment Management • Quad-C Management • Rembrandt Venture Partners • Riverbridge Partners • Rock Creek Group • Russell Implementation Source • SAIF Partners • Samlyn Partners, LLC • SCP Vitalife • SECOR Asset Management • Shenkman Capital Management • Sherbrooke Capital • Sofinnova Ventures, Inc. • Spark Capital • Spectrum Equity Partners • State Street Global Advisors • Strategic Global Advisors • Steadfast Capital Management LP • Stone Harbor Investment Partners LP • Strategic Global Advisors • Summit Creek Advisors • Summit Ventures • SV Life Sciences Advisors • TA Associates/Advent • Taconic Associates, LLC • Technology Crossover Ventures • Texas Pacific Group • Thoma Bravo • Thoma Cressey Partners • Thomas H. Lee Equity Partners, LP • Times Square Capital Management • Torquest Partners • Towerbrook Capital Partners • Trident Capital • Trust Company of the West • Union Square Ventures • VantagePoint Partners • Venture Capital Fund of New England • Vestar Capital Partners • Vista Equity Partners • Voya Financial • Wasatch Advisors Inc. • Wayzata Investment Partners • Welsh, Carson, Anderson & Stowe • Weston Presidio Capital • WestView Capital Partners • Whitney & Company • William Blair Mezzanine Capital Fund, LP • Willis Stein • Winton Capital Management • Xenon Private Equity, LTD • York Capital Management

RETIREMENT BOARD	INVESTMENT VENDORS		
PLYMOUTH COUNTY ▶ Custodian: State Street Bank & Trust ▶ Consultant: Meketa Investment Group	<ul style="list-style-type: none">• ABS Investment Management, LLC• Aetos Capital, LLC• AEW Capital Management, LP• Akina Limited• Ascend Venture Group• Ascent Venture Partners• Audax Management Company (NY), LLC• Berkshire Property Advisors, LLC• Boston Company Asset Management, LLC• BTG Pactual Timberland Investment Group• Charles River Ventures• Denver Investments• DN Partners• DSF Group• Eaton Vance Investment Counsel• EnTrust Partners Offshore, LP	<ul style="list-style-type: none">• Fisher Investments• Franklin Templeton Investment Management• Geneva Capital Management, Ltd• Global Infrastructure Management, LLC• Globespan Capital Management, Inc.• HGK Asset Management, Inc.• Hunt Investment Management, LLC• Income Research & Management• Intercontinental Real Estate Corporation• Invesco Trust Company• J.P. Morgan Investment Management, Inc.• KBI Global Investors (North America Ltd.)• Landmark Partners, LLC• Lee Munder Capital Group, LLC• Leeds Equity Partners	<ul style="list-style-type: none">• Lexington Partners, LP• McDonnell Investment Management, LLC• Mesirow Financial Capital Partners X, LP• Mesirow Financial Institutional Real Estate• New Boston Fund, Inc.• Prudential Real Estate Investors• RhumbLine Advisers• Rohatyn Group• SEI Trust Company• Siguler Guff Advisers, LLC• Summit Partners, LP• THL Credit Advisors, LLC• TimberVest, LLC• Wellesley Advisors Corporation• Wellspring Capital Management, LLC
QUINCY ▶ Custodian: State Street Bank & Trust ▶ Consultant: Meketa Investment Group, Inc.	<ul style="list-style-type: none">• Aberdeen Asset Management, Inc.• Acadian Asset Management, LLC• Adams Street Partners, LLC• AEW Capital Management, LP• Beach Point Capital Management, LP• Brookfield Asset Management• Brown Advisory, LLC• Colony Realty Partners	<ul style="list-style-type: none">• Columbia Management Investment Advisors, LLC• Copper Rock Capital Partners, LLC• Goldman Sachs Asset Management, LP• Hancock Timber Resource Group, Inc.• Loomis Sayles & Company• Oppenheimer Alternative Investment Management• PRIT	<ul style="list-style-type: none">• RhumbLine Advisers• Ridgemont Equity Partners• SL Capital Partners, LLP• State Street Global Advisors• Stone Harbor Investment Partners, LP• TA Realty• UBS Realty Investors, LLC
READING	<ul style="list-style-type: none">• PRIT		
REVERE	<ul style="list-style-type: none">• PRIT		
SALEM	<ul style="list-style-type: none">• Ascent Venture Partners	<ul style="list-style-type: none">• PRIT	
SAUGUS	<ul style="list-style-type: none">• PRIT		
SHREWSBURY ▶ Consultant: Dahab Associates, Inc.	<ul style="list-style-type: none">• PRIT		
SOMERVILLE ▶ Custodian: Comerica Securities	<ul style="list-style-type: none">• Congress Asset Management Company, LLP• Lazard Asset Management, LLC	<ul style="list-style-type: none">• Loomis Sayles & Company• RhumbLine Advisers	<ul style="list-style-type: none">• UBS Realty Investors, LLC
SOUTHBRIDGE	<ul style="list-style-type: none">• PRIT		
SPRINGFIELD ▶ Custodian: PeoplesBank	<ul style="list-style-type: none">• Boston Millennia Partners	<ul style="list-style-type: none">• Crescendo Ventures Management, LLC	<ul style="list-style-type: none">• PRIT
STATE	<ul style="list-style-type: none">• PRIT		
STATE TEACHERS	<ul style="list-style-type: none">• PRIT		
STONEHAM ▶ Custodian: SEI Private Trust Company ▶ Consultant: Fiduciary Investment Advisors, LLC	<ul style="list-style-type: none">• PRIT	<ul style="list-style-type: none">• SEI Investments Management Corp.	
SWAMPSCOTT ▶ Custodian: People’s United Bank ▶ Consultant: Fiduciary Investment Advisors, LLC	<ul style="list-style-type: none">• Fred Alger Management, Inc.• Intercontinental Real Estate Corporation	<ul style="list-style-type: none">• North Sky Capital, LLC• PRIT	<ul style="list-style-type: none">• Trust and Fiduciary Management Services, Inc.

RETIREMENT BOARD	INVESTMENT VENDORS		
TAUNTON ► Custodian: State Street Bank & Trust ► Consultant: Dahab Associates, Inc.	<ul style="list-style-type: none">• BlackRock Investment Management, LLC• Boston Millennia Partners• Brandywine Global Investment Management, LLC• Ceres Partners, LLC• C.S. McKee, LP• Daruma Capital Management, LLC• Denver Investments• Earnest Partners, LLC• Frontier Capital Management Co., LLC	<ul style="list-style-type: none">• Glovista Investments, LLC• Herndon Capital Management, LLC• Intercontinental Real Estate Corporation• Invesco Core Real Estate USA, LP• Invesco Trust Company• Invesco Private Capital, Inc.• Long Wharf Real Estate Partners, LLC• Manulife Asset Management, LLC	<ul style="list-style-type: none">• Molpus Woodlands Group, LLC• Polen Capital Management, LLC• State Street Global Advisors• TimberVest, LLC• Victory Capital Management• Vontobel Asset Management, Inc.• Weaver C. Barksdale & Associates• Wells Capital Management, Inc.
WAKEFIELD	<ul style="list-style-type: none">• PRIT		
WALTHAM ► Custodian: SEI Private Trust Company ► Consultant: Fiduciary Investment Advisors, LLC	<ul style="list-style-type: none">• Ascent Venture Partners• Hunt Investment Management, LLC• Intercontinental Real Estate Corporation	<ul style="list-style-type: none">• Invesco Private Capital, Inc.• Precision Capital Advisors, LLC• PRIT	<ul style="list-style-type: none">• RCP Advisors, LLC• SEI Investments Management Corporation
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